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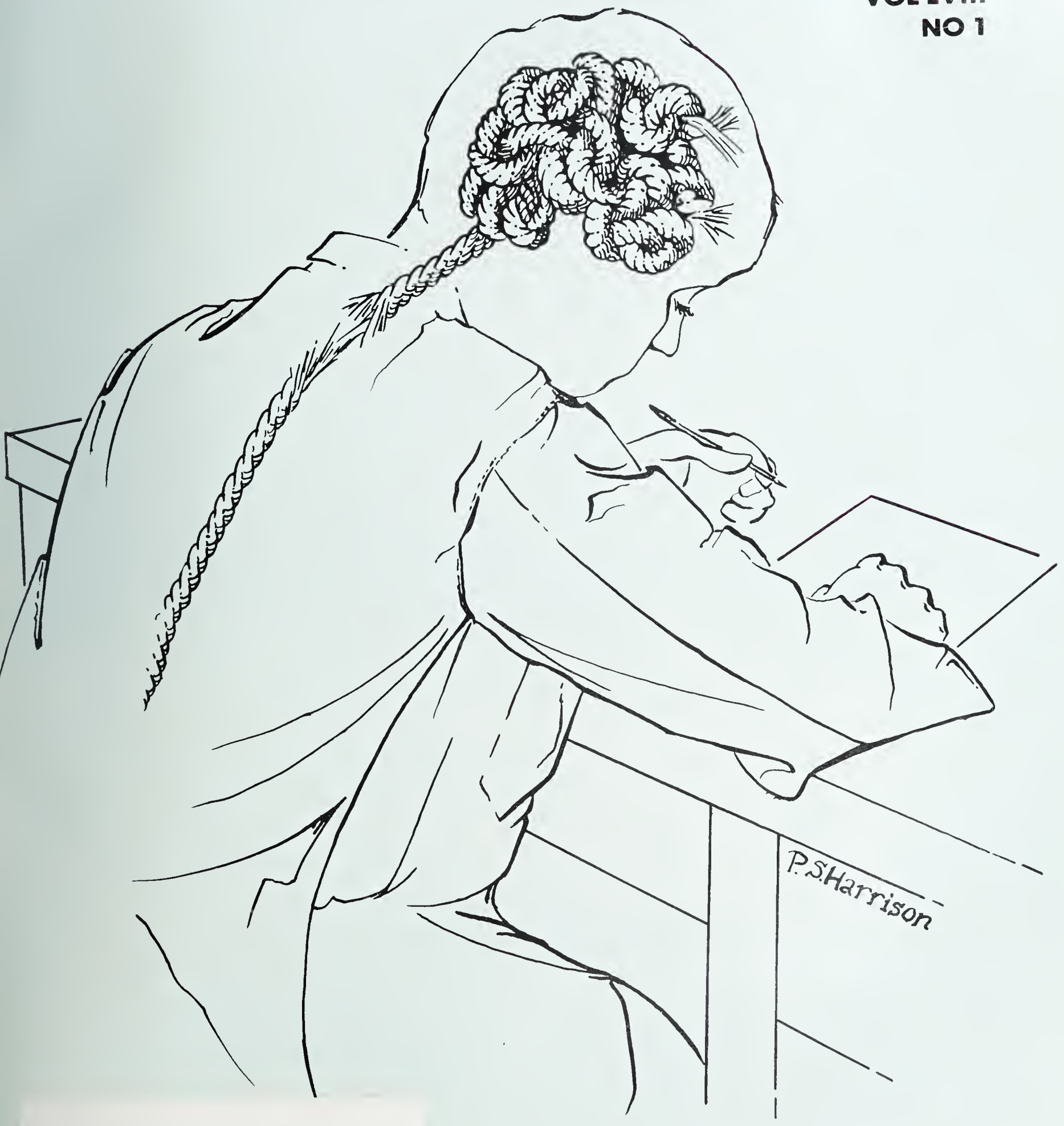

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GUIDELINES FOR PUBLICATION

1) All articles intended for publication should be submitted to the editors before the deadline which is usually six weeks before the release of the Journal
2) Submitted articles should be typed (or legibly printed) double-spaced, single-sided on paper 8½" x 11" (letter size) and they should not be more than 15 to 20 pages (3000 to 4000 words)
3) Illustrations, graphs, diagrams and figures should be put on a separate sheet and identified by Arabic numerals. A list of explanatory legends for all the figures and diagrams should be put on another sheet. Do not write on the back of photographs
4) References should be checked with the original sources, designated by Arabic numerals in the text, numbered in order of appearance and put on a separate sheet. Each periodical reference should include in order the author's name and initials, title of the article, Journal name, volume number, page number and year (eg., 1. Rosen HJ. Lumbar intervertebral disc surgery: review of 300 cases. *Can. Med. Assoc. J., 101: 317, 1969.*)
5) The editors reserve the right to make such editorial changes as are deemed necessary to ensure correctness of grammar and spelling, clarification of statements and conformity to Journal style
6) Acceptance for publication is subject to the understanding that such material is submitted solely to the Journal and will not be reprinted without the consent of both the editors and author

Living With Learning To Be An M.D.

Dr. Terence Burrows

Dr. Terence Burrows is a 1968 graduate of the University of Toronto Medical School.After practising family and community medicine in Northern Ontario in the early 1970's, Dr. Burrows became interested in psychosomatic medicine, stress management and psychotherapy in general practice. Now, in addition to his private consulting practice in Toronto, he is frequently engaged as a speaker, consultant and trainer.

Dr. Burrows is a contributing member of the Editorial Advisory Board of Canadian Doctor magazine, and recently published a 3-part series on Stress and the Medical Profession in the February, March and April, 1980 editions of Canadian Doctor.

"Stress and the Physician-in-Training" is a special adaptation of this series at the request of the University of Toronto Medical Journal.

The greatest continuing challenge to you in becoming a physician is not merely an academic one. The real task before you, as a new year of medical studies begins, is to become your own professional person. It is to remain, or to become, a functioning, emotionally and mentally flexible human being, both while and after you become a competent, fully qualified M.D. To do this, you will need to live, work and love fully, while paying attention to your own well-being, self-actualisation and happiness.

A tall order? Look ahead. The priorities of the real world are different from those of medical school. Five years after you graduate, 50 per cent of the specifics of what you are being taught will be obsolete. Every practising doctor will tell you that you will not really learn how to practice medicine until you get out of medical school. You must especially get out of the very specialized and inbred environment of the teaching hospital and into the communities where your patients live.

But, this should not be a cause for discouragement or cynicism about what lies immediately before you. Rather, it should be a spur for seizing the great opportunity, so seldom taken up, that medical school presents. This is the opportunity for your own personal growth and development through the intimate encounter with sick people, specialized knowledge, interaction with your peers and mentors and the pursuit of excellence in this powerfully spiritually fulfilling profession of ours. Indeed, one of our own great men, Sir William Osler has called it "the only profession".

But, you must be aware of, and learn how to handle better than most of those who have gone before you, the emotional pitfalls of the medical education. These pitfalls are those many and potent formative and deformative learning experiences which can conspire against your personal development as a human being. Encountered without self awareness or insight or proper sharing, these experiences can turn you into an emotionally bottled-up, developmentally arrested, socially isolated obsessive-compulsive. Many of us already enter medical school with predispositions in these directions, and it is an unfortunate fact that the process of medical

education, unleavened by enlightenment along the way, can amplify and reinforce these tendencies.

But forewarned is forearmed. The conditioning and reinforcement of the mental mechanisms of repression, forgetting and cynicism begin when you stop feeling like vomiting and can nonchalantly eat you sandwiches while dissecting your cadavers. In clinical years, when faced with patients' suffering and death about which your own feelings and fears are unresolved, in your own mind you change them from persons who need compassion and empathy into distant depersonalized objects of academic exercises. This self protective defence mechanism costs you further loss of self awareness, emotional flexibility and the capacity to love.

Also, you will meet many "Superman Staffmen" along the way, who will awe you and make you feel inferior and inadequate with their dazzling grasp of all that you are striving for. But be very careful who and what human and professional qualities and values you internalize as role models. Remember that Superman Staffman is not a better person than you are. He is just another colleague who has been at it a lot longer than you have. And, although he looks great and in complete control on the wards, he may not be able to communicate with anyone outside of his own narrow little field, and the rest of his life may be a very different story.

Beware "la deformation professionelle". Patients want their doctors to be affable, available and able—in that order. Most importantly, they want you to be a caring human being to whom they can turn, who can sustain them strongly in times of trouble. In order for you to become that well rounded person, you will have to keep living and experiencing as fully as you can, as well as pursue your studies.

Just as in the future your response to the demands of your practice will depend on the decisions you make for yourself about your own life priorities, so now, in spite of what you currently see as obvious objections to the contrary, does your response to the demands of your training depend on your own decisions about your own life priorites. Don't get caught in the competitive, workaholic rat race. What is it for? If you consistently put in an honest day's work, you will do fine. If you pursue marks at the expense of your feelings, your relationships, your hobbies and your personal growth as a human being, 10-20 years after graduation, if you are not a sickly burned-out husk, you will wonder what you missed.

By all means do the best you can, but be true to yourself. Maintain a sensible balance in your life and take care of yourself and your needs. Try to learn how to love; to love yourself, your dear ones, love patient care and your confreres.

As brothers and sisters in a noble profession, we all need each other. So start learning how to take care of each other now.

Your real job here at medical school is to learn to grow as a strong, loving, competent human being, while at the same time learning to become a competent physician. Society really expects us to be both. And, Doctor, the more you succeed in this, the more successful and fulfilled will be your own life as a whole, and the more your patients will thank you and love you for your efforts. □

"This above all; to thine own self be true,
And it must follow, as the night the day,
Thou cans't not then be false to any man".
(Act 1, scene iii—Hamlet, William Shakespeare)

Stress and the Physician-In-Training

Dr. Terence Burrows

Many of the experiences of medical education teach us "right" things about becoming a competent physician, but "wrong" things about becoming a competent human being. Role strain and personality vulnerability combine to make medicine a uniquely stressful occupation. The author identifies many of the unique hazards of the medical lifestyle, discusses principles of the successful management of the stresses they cause, and calls for the development of peer support groups throughout the training—practice continuum.

Our Perilous Profession

Becoming a physician and practising medicine can be hazardous to your health. You will not see this warning printed on the bottom of your medical school prospectus, but it is an undeniable fact of life — your life. Studying and practising medicine is one of the most uniquely stress producing jobs available today. In the past 10 years, medical authorities everywhere have become increasingly concerned with the growing incidence, within the ranks of the medical profession, of stress related psychological illnesses and addiction to alcohol and drugs. And, more and more, attention is being focused on the medical school and the process of medical education as the creative cauldron of many of these future impairments.

The statistics, although understandably 'soft', are arresting. It is generally estimated that, of the more than 33,000 doctors in Canada, 10 per cent have problems related to the overuse of alcohol and one to two per cent are addicted to drugs. Twenty-five per cent of medical students are estimated to use alcohol or marijuana on a regular basis, and the use of tranquilizers, sedatives and amphetamines at exam time is widespread. Other personal problems of physicians involve marital discord and financial difficulties.

These can all reach serious proportions as it requires one to two medical school classes to replace the approximately 200 doctors who commit suicide each year throughout North America. Under the age of 40, male physicians commit suicide three times (and female physicians four times) more often than the general population. Female physicians tend to suicide during their training, male physicians afterwards.

Why is becoming a doctor so stressful, and what can be done about it?

Stress and Medicine

Our current understanding of the effects of stress on health and well-being stems from the pioneering work of Canadian physician Hans Selye. Selye, in 1936, described the three basic stages of the stress reaction in experimental animals. The progressive reactions of adjustment, adaptation and exhaustion resulted in adrenal enlargement, lymphatic atrophy and peptic ulceration. For humans, the stress concept has become enlarged to include any influence which can affect our physical, mental and social health.

This concept now has a special meaning for physicians. An ever increasing number of the complaints brought to practising physicians is related, not to specific illnesses which can be efficiently dispatched through the wonders of modern medicine and surgery, but to emotional stress and to psycho-social factors. And, as life becomes increasingly more complex and demanding for us all, our ability as physicians to continue to meet society's needs and handle our patients' stress responses will become critically dependent on how well we learn to handle our own.

The Formative Years

But, by the time we have become sufficiently trained to practice medicine, we have already been extensively deformed by our educational experiences in medical school. Medical training, being as much a tribal rite of passage as it is an acquisition of knowledge, turns a moderately bright, ordinary human being with an idealistic concern for humanity into a technological wizard able to bring unprecedented resources to bear on mankind's eternal fight against disease. But, paradoxically, what becomes of the capacity for human experience and human expression of the recipients of this training can be very much less than their ability to wield technology.

Many people have been asking how ultimately suited to become doctors many of the persons who elect, or who are selected for, medical training are. There is an undoubted occupational selection and reinforcement of those personality traits which are most vulnerable to stress. These traits are not only devotion to duty, but also compulsiveness, obsessiveness, personal insecurity, isolationism and competitiveness. This would not be such a problem if the process of medical education took advantage of its unique opportunities in the confrontation with suffering to foster emotional maturity as well as technical expertise.

Medical training brings young men and women into intimate contact with pain, hopelessness, death and dying. With proper assistance in learning how to react to and integrate our feelings along the way, this could be a profound growth experience. However, we have not yet learned how to do this and so the majority of students compensate for their emotional undernourishment with intellectual abstraction and the drive to overachieve. Unfortunately, this leads many into increasingly diminishing returns, especially since we are told by our educators that the half-life of our hard acquired technical knowledge is now, at best, about five years.

But the medical schooling process teaches us something far more enduring from the standpoint of our on-going mental health. It teaches us to repress and conceal our natural human emotions, sensitivities, needs and vulnerabilities, and to internalize role models who may not be good examples for us to follow as we grow into leading our own lives.

Learning to "Bottle-Up"

The process starts early. In only a few months we forget that we felt like throwing up the first time we saw our anatomy specimens. We forget, as we get more experience assisting at operations, that our first sight of the gore made us feel faint. It only takes one or two chewings out from the resident about losing "control" of our interaction with patients to learn to hide our own frustrations and fears of disease, suffering and death.

Thus, in order to survive, we start to learn maladaptive defensive postures and to distrust sharing our feelings with each other. This leads to the detriment of our forming empathetic and co-operative lifetime peer relations with our confreres and emotionally open relationships with our spouses.

As growing persons under stress, we all need someone to look up to. And very early on we are presented with Superman Staffman—the idealized, omniscient, critical parent in white, whose stunning ability and instant grasp of the latest answers sets a pattern of feelings of professional and personal inadequacy in us that lasts for decades. As we absorb Superman Staffman's mannerisms and style, we also absorb his personal and professional attitudes. He teaches us by example that patients are objects of academic exercises, not real people with human problems deserving our own human empathy and respect. Later on we learn that this superman must have been putting on a very good act; that many times behind the facade of his all-knowing invulnerability, (after having been up on call half the night), his own insides quailed at the prospect of the eager onslaught of anxiously keen and competitive young minds.

However, as a result of these and other experiences, we very quickly learn that ordinary human feelings, sensitivities, needs and vulnerabilities are forbidden admissions of inadequacy and failure and threats to our future success. And these conflicts become particularly acute during internship and residency when we have the simultaneous roles of providing service as employees of a hospital and continuing our professional training as students of a university, while at the same time trying to have a family life of our own. In the past, about the only consolation was the thought that one day you would be senior enough to give someone junior to you a hard time "because I had to do it and it didn't hurt me".

Didn't it?

The progressive isolation of our emotions and the splitting of our professional and private personalities hammered into us by our training, leads to the learning of dysfunctional stress-coping mechanisms and to progressive professional and social isolation and loneliness. Not only do we not learn how to know and feel comfortable with ourselves as people, there is little opportunity for the stimulating life experiences or relationships with others that lead to a more balanced and well rounded personality. We tend to become very lopsided and one dimensional, our emotional underdevelopment concealed behind a forged professional shield. Over a period of time this underdevelopment hurts, and in our reactions and our relationships with others, it shows.

Pressures, Conflicts and Marriages

From its very beginning, medical role strain involves increasing pressure, focusing on the sharp conflicts of time, priorities and decisions. There is always more to be done than is physically or emotionally possible. This only intensifies the guilt caused by all the "shoulds" and "musts" in our lives. Sacrifices start being made and horizons lost: relaxation, recreation, friends, hobbies, vacations, interests—and families.

Although the pattern is changing, most medical marriages consist of the doctor and his wife. And the key to a happy doctor is a happy doctor's wife. But major problems reported in medical marriages involve unrealised high expectations by physicians' spouses of their marriage to a physician, and feelings of abandonment due to the frequent absence of the husband. The medical wife is often left to her own resources during critical periods of childbearing, child rearing and the running of a home. Also, many couples have difficulty in achieving meaningful communication at an emotional and sexual level. This is almost programmed into the medical marriage because of the conditioning process of emotional suppression in the medical training of the physician husband. In fact, the very attitudes and personal attributes that lead to professional success can create communication problems at home. The qualities of decisiveness,

ambition, conscientious hard work, cool intellectual logic and getting things done in a hurry can make the doctor a "good guy" at work. But these same qualities can be seen as overbearing, selfish, neglectful, uncaring, unemotional, insensitive and unromantic, and make him a "bad guy" at home.

Without the time to clarify these ambiguities and role conflicts at work and at home, it is easy for resentment to break communication. It is also very easy for the husband to avoid problems at home by becoming increasingly "busy" at work. This makes it very difficult for the loyal spouse to complain about her own unmet needs because her husband is, after all, out learning or healing the sick and that is surely "more important" than her problems. Thus, her accumulating guilt and resentment over her emotional deprivation can lead to isolation, depression, alcohol abuse and somatisation of her feelings, in an attempt to get attention from her physician-husband by being a patient instead of a wife.

Other marital stress patterns reported involves excessive dependency on the part of the husband at home. Having exhausted his "caring and sharing" energy during the day in many worthwhile professional and community endeavours, the physician-husband may have more of an emotional desire to be taken care of like one of the kids than to be the head of the household.

Medical marriages need the same things that any other marriage needs - the meaningful sharing of thoughts, feelings, love and sexuality between life partners. The doctor's marriage has the special problem of time and priorities and finding the right balance between conflicting professional and personal demands. We have to realize, and actively work to counteract, the fact that the process of learning to become doctors has made it more difficult, not less, to be good emotional communicators with our dear ones.

The wife of a medical student told me, "I'm scared when he goes into practice. At least now, when he has to study all the time, we are still together. I want to have our children early so I'll have some company when he is away. I just hope we continue to grow intellectually and emotionally together."

Self Prescribing- Medical Russian Roulette

True to our emotional training in medical school, when we have problems, we tend to keep them to ourselves, struggling along on our own individual resources come hell or high water. And, if we start to feel unwell, the medical care which we and our families receive is surprisingly poor. This is not because good care is unavailable, it's the way we take it.

One of the most difficult things for a doctor to do is to accept his own dependency needs; to take his badge off and allow himself or his family to be another doctor's patient when necessary. Not wanting to "bother" our colleagues because we don't trust them or because of our own professional pride, we start to treat our own families for minor problems, the minor suturing job, the headache, the insomnia, etc. But far more dangerously, we are in a position to diagnose and treat ourselves, no matter how poor our own judgement of our condition may become. We have legal and instant access to potent pharmaceuticals. Because we know so much about them professionally, we tend to underestimate the effects they will have on us as we prescribe them for ourselves and to down-play their short and long-term effects on us. Because of our privileged ease of access to drugs, it is very easy to look for chemical answers to our own human problems.

The blase attitude of doctors towards their own tolerance to mood altering chemicals starts in medical school, where the "booze-up" becomes the major method of blowing off steam, and sedatives and stimulants are accepted ways of dealing with exam stress. We then get used to the idea of treating our increasing fatigue and tension complaints with alcohol and tranquillisers.

As the major marketing arm of the pharmaceutical industry, the practising physician is the target of massive promotional campaigns and the recipient of many free samples. It is all too easy for doctors under stress to quietly and surreptitiously start eating their mail from drug companies instead of reading it.

The road to alcohol and drug addiction for physicians under stress is built in to the medical lifestyle and more and more of us are becoming quietly and seriously hooked, to the detriment of our patients, practices, families and ourselves. In fact, in the last three years, the problem of the physician impaired by emotional illness and addiction to alcohol or drugs has become so widespread that treatment and rehabilitation programmes especially for doctors have started to spring up throughout North America.

Programmes For Doctors

Since the 1970's medical societies in both the USA and Canada have fostered the development of educational and treatment programmes for stress and addiction impaired physicians. One of the most advanced is the Doctors' Programme at Toronto's Donwood Institute, set up through its joint co-operation with The Addiction Research Foundation and the College of Physicians and Surgeons of Ontario. The first physician patient was formally admitted to this programme in July, 1977 and by September, 1979 the 50th M.D. had been admitted in the 26th month of operation.

At the training end, Dr. Tom Noseworthy of the Canadian Association of Interns and Residents (CAIR: motto "Doctors are people too") has been instrumental in encouraging provincial housestaff associations to establish Physician at Risk Committees. Dr. Bob Howard, President of the Professional Association of Interns and Residents of Ontario (PAIRO) told me that such a committee has been set up in Ontario at the University of Toronto. The purpose of the committee is to raise awareness of physicians' problems related to drug and alcohol, marital discord and psychological problems. Also proposed is the institution of preventative measures directed

towards physician stress and impairment in training programmes and to establish realistic therapeutic options for physicians-in-training who need help.

Desperate People in White Coats

The roots of potential physician impairment due to emotional illness or addiction to alcohol or drugs are deep. They extend back to the individual's early nurturant life experiences and the personality he or she brought in to medical school, plus the way that personality was formed and deformed during medical training and early practice experiences. Many of the psychodynamics that lead individuals into a career in medicine are the same ones which predispose them to emotional disorders, alcoholism, drug abuse and mental illness.

The long hours, the intense anxiety of our learning experience and the progressive emotional and social isolation and loneliness inherent in our professional lifestyles tend to induce an early pattern of self-medication and drug use. The ready availability of drugs is one of our unique occupational hazards. Physicians having difficulty coping with stress and who are sliding down the road to impairment suffer not only a loss of performance, but also the ability to accurately judge their condition.

Colleagues and family who become aware of an impaired physician frequently cover up the matter and engage in a conspiracy of silence, thereby leaving the victim to his or her own devices until a mishap or tragedy occurs.

But this is not necessary anymore. There are many programmes available for those already in trouble and much that can be learned and done to prevent it.

Well Being and Stress Management

Stress management is a skill which must be learned through experience. It is not something that is conferred automatically by birth. And the key concept in stress management is the concept of well-being; identifying it, achieving it and maintaining it. We can define well-being as personal fulfillment through the harmonious unfolding, development and interaction of all aspects of the personal, social and professional self. A tall order, but there are some basic principles which my experience with patients in stress management practice has taught me that can take us a long way towards this goal. Some of these principles are:

1. Recognition and responsibility
2. Decompression
3. Self-assessment and re-evaluation
4. Re-creation and lifestyle change
5. Skill development
6. Arts of living
7. Philosophy
8. Self-transformation and personal growth.

Space allows me to cover briefly only the first two.

Recognition and Responsibility

The first step in solving a stress problem is to recognize it and admit that we have it. To solve it, we have to accept our personal responsibility for having the problem. No matter how many external factors or stresses there are, or what problems we are having with other people, our own particular personal stress reaction is our own problem with ourselves.

So accepting personal responsibility for our problems actually means accepting personal respondability, or the recognition of our personal power to recreate our reactions to situations and to restructure the part that we play in them. As physicians, we have to relinquish our persona of professional invulnerability and admit that we are people, too. We can, and should, remove from within our own ranks the stigma attached to experiencing and working through emotional, social and professional difficulty.

The sign of weakness is not in having normal human feelings and problems and needing to share and talk about them. The sign of weakness is failing to have the courage to trust and open up to another person and because of fear, professional pride or ego, to bottle it all up until we eventually become impaired by our unrelieved personal distress. And the sign of giving up is the reaching for the chemical crutch or the "ultimate" tragic solution of suicide.

Decompression

The key is to find someone you can trust to whom you can ventilate your feelings and blow off steam. You need a big, non-involved, non-judgemental "ear" who understands that, in sharing and discussing your burdens, you are not trying to transfer them, nor is there any obligation for the burdens to be taken on, or to have an answer produced for them. Most frequently, what we need from others is the comfort of an understanding, accepting response at a feeling level.

If you don't have such an "ear" to talk into, find and cultivate one. It may be a friend, a counsellor, a pastor, or your own doctor. Find a doctor who is not nervous in dealing with you because you are a doctor, and thus ends up treating you in a way that he would never dream of treating a patient, i.e. asking you what you think ought to be done about your own X-rays, lab tests and the like. Let go and let others look after you when you need it, and have the guts to tell them what is really bothering you.

We can release our pent-up emotions by talking them out, but frequently we need to release our emotions more emotionally than intellectually. People do this by sighing, yawning, laughing, crying, shouting, sleeping, or escaping in various other ways. The main things we need to learn are to allow ourselves a quiet weep or a loud laugh when needed, and to learn to release our anger and guilt in constructive ways. This we can do through expending our angry energy in the physical punishment of inanimate objects and by mobilizing our assertiveness or forgiveness to make positive changes in the situations which need them.

Moreover, we should try not to take so seriously, or so personally, everything that happens to us. The people we work and live with have their own personal problems which they are trying to solve for themselves, and they are sometimes so wrapped up in them that they are unaware that they produce stress in others.

Another major component of per-

sonal decompression is learning the relaxation response. A number of techniques are available for this, ranging through muscular tension/release exercises, progressive relaxation, autogenic training, hypnosis and various forms of meditation, visualization and breathing exercises.

My own preference for teaching relaxation skills is the use of biofeedback monitors. I usually recommend the regular use of an inexpensive skin resistance (GSR) biofeedback instrument coupled with coaching in activity-pacing, emotional release techniques and problem-solving using drawings as a means of symbolisation and dramatisation. These techniques have the dual benefit of cumulatively lowering one's sensitivity to stress response arousal by life's ups and downs and conferring the conscious ability to control the degree of one's arousal due to stress. They also help to mobilise creativity and foster personal growth.

In addition to dealing with our stress responses - by learning alternative ways of responding to pressure - it is important to change and restructure, as much as we are able to, the situations which have provoked them. This involves a reassessment and recreation of our part in these situation, and exercising or learning the skills of management required to move or resolve them.

Peer Support Groups

In lieu of presently outlining the remaining principles of stress management, I would like to call for the development within the profession, at all levels of the training -practice continuum, an innovation which would be a major step forward in addressing most of the major concerns of this subject. This is the peer support group. Establishment of such groups is a trend which has become well-developed in other areas in the last decade. Peer support groups are far more than the gossip, gripe, and sarcasm sessions that develop spontaneously around coffee urns. They are much more goal-oriented and encourage both mutual support and organizational climate changing. Their existence makes it acceptable to be able to open up and admit to yourself and to your peers that you are human like everyone else and having problems coping with rapid change. Peer support groups have developed unofficially and spontaneously around interested individuals in the past, but they need to be a planned and official part of our professional life.

It is recommended that to be effective, peer support groups should consist of up to 10 people, last for 90 minutes two or three times per month, and be supported at the highest organizational level, with coverage provided. Initially the leaders should be well-trained to deal with such groups until trust develops, and the topics should be loosely structured, e.g. "stress and coping" to permit ventilation and sharing of feelings. Other steps could include identifying support persons in the medical school or community who are independent of political or administrative pressures, and who have skills in dealing with emotional and social problems of physicians and physicians-in-training.

Group facilitation and counselling may not necessarily be roles for the psychiatrists. In fact, many doctors I spoke to indicated that it may be better if such activities were co-ordinated by "enlightened GPs" or non-MDs such as social workers or clergy. But one thing is clear: nobody but another physician knows what it's really like to be a doctor. And we very much need to learn how to care for each other and to help ourselves.

Time To Act

The unpredictable changes and pressures of the demanding 80's will continue to bear down upon us all, and the stresses inherent in the lifestyles of both the physician-in training and the physician-in-practice will continue to escalate accordingly. There is now a wide range of stress management techniques available. The institution of only one of them - the peer support group - at all levels of the training-practice continuum, could be a major contribution. In addition, the consistent teaching and application of the principles of stress management in the medical context would open up many more constructive horizons. A doctor who has learned how to manage stress of his own life is in a far better position to teach his patients how to manage theirs.

More and more physicians-in-training, as well as those in practice, are rejecting the notion that stress and impairment are necessary or unavoidable components of their careers and lifestyles. A concerned and co-ordinated approach to stress management for the profession, initiated from within the profession, is clearly an idea whose time has come. But the major initiative for making sure that you get the stress management support that you need has to come from you.

You owe it to yourself and everybody else concerned with you to get it. Make sure you do. □

Where to Learn More

The Author

Dr. Burrows is preparing a number of instructional materials on stress management and a regular newsletter about up-to-date developments in the field. If you would like to receive information about these as they become available, send your name and address, referring to this article, to:

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Sources of Assistance and Referral

1. *Dr. E. Llewellyn-Thomas,*
   Associate Dean, Undergraduate Affairs,
   University of Toronto,
   978-2717
2. *University Health Service,*
   Psychiatric Division,
   2 Bancroft Street,
   978-2441
3. *In hospital, talk to the hospital co-ordinator for your year.*
4. *The Clarke Institute of Psychiatry,*
   250 College Street,
   979-2221
   is open 24 hours a day, 365 days a year, on a drop-in emergency/out-patient basis. Dr. Alan Lyall, psychiatrist-in-charge of ambulatory services, has a special interest in psycho-social stress problems.

5. *The Advisory Bureau of the University of Toronto, 631 Spadina Avenue, 978-2684 (Dr. D. M. Graham, Director), has exam anxiety clinics for students with severe test anxiety.*
6. *Physicians Information Centre Hot Line, (416) 595-6288, Addiction Research Foundation, Toronto, Ontario (24 hours a day, 7 days a week).*
7. *The Doctors Programme,*
   The Donwood Institute,
   175 Brentcliffe,
   Toronto, Ontario
   Dr. D. Macdonald (416) 425-3930 and Dr. J. MacMillan (416) 499-3375.
8. *Addiction Research Foundation,*
   33 Russell Street,
   Toronto, Ontario
   Dr. J. Rankin (416) 595-6000
9. *The Homewood Sanatorium,*
   150 Delhi Street,
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Congenital Dislocation and Subluxation of the Hip

Tilok Ghose 8T2

Congenital dislocation of the hip is an important musculo-skeletal abnormality. Infants with this condition have a minimal anatomical defect at birth, but if untreated, may develop severe deformities of the hip secondary to the dislocation.

Recognition of this condition in conjunction with specialized treatment will return the joint to normality and halt the progressive acquired postnatal changes.

Congenital dislocation of the hip occurs in 1.5 per 1000 live births, making it a very important abnormality. Early diagnosis combined with expert treatment is essential to correct the condition. Incomplete restoration of the hip joint gives rise to a tragic consequence — premature degenerative arthritis beginning in early adult life. Congenital dislocation and subluxation of the hip of the teratologic type may also be associated with spina bifida and arthrogryposis multiplex congenita, but this rare syndrome will not be discussed here.

Etiology

The hip joint, one of the most stable synovial joints in the body, develops around the tenth week of intrauterine life. Normal formation depends upon three structural factors:

1. The action of the muscles controlling the movement of the hip;
2. The shape of the opposing cartilaginous and bony surfaces of this ball-and-socket joint; and,
3. The integrity of the joint capsule.

Of these, the most significant is the latter. At birth, the undue laxity of the joint capsule, possibly genetically determined, is seen in one child in eighty. The majority of children with congenital dislocation of the hip are girls. Furthermore, affected boys tend to be less masculine than the average, suggesting that abnormalities in hormonal factors may be involved.

As the hip joint is developing in the uterus, it is constantly in a position of complete flexion. At birth or in the first few weeks of life, the hips may be suddenly extended. This position change in the presence of joint laxity stretches the capsule of the hip joint and may produce either a dislocation (luxation) or a subluxation. In a dislocated hip, the femoral head is completely outside the acetabulum but is still within the elongated capsule. A subluxation (partial dislocation), where the femoral head rides on the edge of the acetabulum, is usually contained within the acetabulum when the hip is flexed and abducted, and is subluxed in extension and adduction.

Pathogenesis

As a result of dislocation of the hip, the anatomical structures of the joint develop secondary changes. These sequelae include acetabular dysplasia and maldirection; increase in femoral neck anteversion; contractures and shortening of the iliopsoas and adductor muscles; and, elongation of the lax joint capsule. These changes become progressively less reversible and more severe with time; hence early recognition is crucial.

Normally at birth, the acetabulum faces more anterolaterally than in adult life. The change in direction occurs as the position of the hip alters from one of flexion and abduction seen in the uterus, to that of extension and adduction seen in the erect stance. The application of this corrective force does not occur if the hip is dislocated. This anterolateral direction of the acetabulum is described radiographically as a sloping of the acetabular roof. However, the pathology is not in the roof of the acetabulum but in the abnormal direction (as described by Salter).

Femoral neck anteversion is normally 30 degrees at birth. The angle gradually decreases to less than 10 degrees in adult life — a direct result of erect stance which applies a corrective force on the proximal end of the femur. This decrease in femoral neck anteversion cannot occur if the hip remains out of joint.

Acetabular dysplasia is caused by the failure of apposition and resultant incomplete articulation of the femoral head with the acetabulum. In the subluxed or dislocated position, the force of the pelvis is distributed over the acetabular lip or the ilium, a smaller surface area than

that of the whole acetabulum. Consequently, the surfaces of the articular cartilages on the acetabulum and femoral head are subject to abnormally high pressures. Such an application of high pressures on the cartilage surface results in dysplasia and predisposes to early degenerative arthritis.

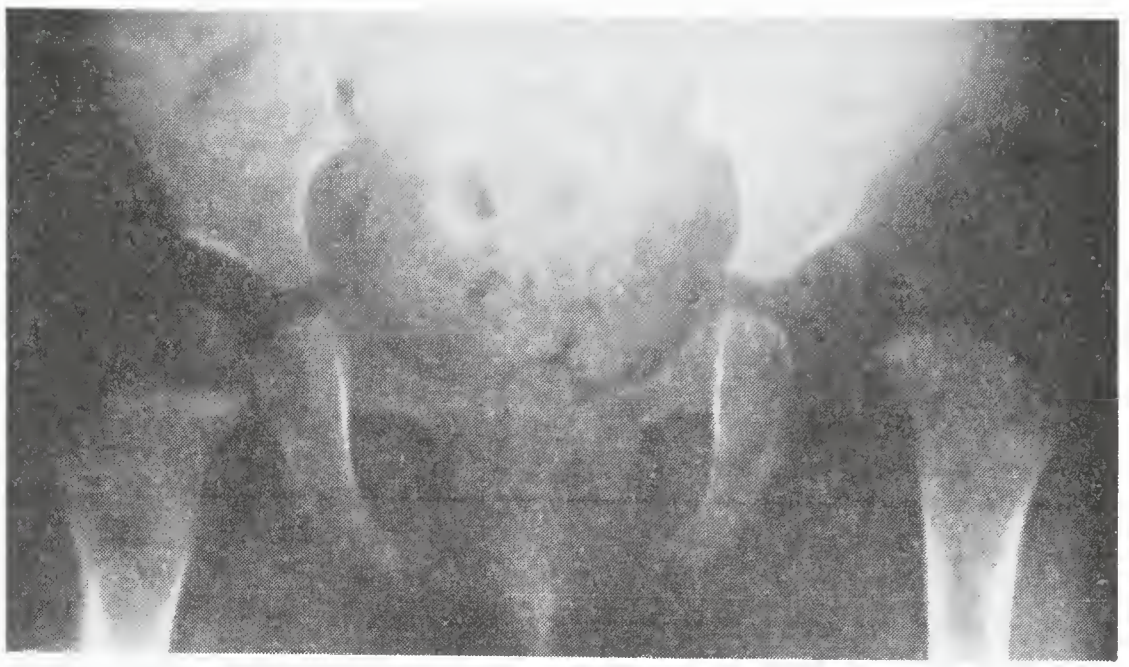

Figure 1: Radiograph showing a left dislocated hip. Note the small ossific nucleus in the left femoral head.

Incidence

The general incidence of congenital dislocation of the hip is 1.5 per 1000 live births. However, this incidence varies with different races and geographical areas.

There is a very low incidence among those races in which the hips of newborn infants are kept in a position of flexion and abduction, e.g. the Chinese of Hong Kong, the Negroes of Central and South Africa, and the Eskimos of Northern Canada. High incidence groups comprise those who maintain the hips of their infants extended and abducted. The latter group includes North American Indians, West Germans, Northern Italians and Laplanders. This would suggest that the position in which the hips of a newborn infant are maintained could be significant in the etiology of this condition.

The incidence of this abnormality also varies with birth presentation, being ten times higher in breech babies than those born by vertex presentation.

Clinical Findings

As has been previously stated, the recognition of hip dislocation at an early stage in life is imperative. Thus, the routine examination of every newborn child must include an examination for dislocation of the hip.

One of the earliest findings is Ortolani's sign (Fig.2). To elicit this clinical finding, the newborn infant is laid on its back with its hips and knees in flexion. The middle fingers of each of the examiner's hands are placed over the infant's greater trochanter, with the thumbs opposite the lesser trochanter. The dislocated hip is reduced as the flexed thigh is abducted.

Stability of the hip joint may also be assessed by performing Barlow's test. In this test, the infant is laid on its back with the tibia and femur held in the palm of the examiner's hand. The examiner's thumb is placed on the medial aspect of the thigh and the long finger is placed on the greater trochanter. With the thighs held in midabduction, the femoral head is then pushed out of the acetabulum by lateral pressure of the thumb and by moving the knee medially with the index finger.

Another clinical finding that suggests a dislocated hip is the presence of extra skin folds on the medial side of the thigh, indicating that one femur is telescoping proximally. However, extra skin folds are sometimes seen in normal infants.

Limitation of passive abduction due to contracture of the adductor muscles is also a very important sign, but this finding is not evident until after the first month of life.

When congenital dislocation of the hip is suspected on clinical examination, radiographic examination is necessary to determine whether the hip is dislocated or subluxed (Fig.1). Proficiency in examining the hips of a newborn infant and in interpreting radiographs of the hip requires considerable skill and practice. Hence the opinion of an experienced individual is invaluable and must be sought to arrive at a definitive diagnosis.

Treatment

The type of management plan that is instituted depends on the age of the child: in the early stages, the most favourable results being obtained with closed treatment, but open treatment becoming necessary with increasing age.

Up to the age of three months, the treatment of choice consists of gentle reduction of the hip with maintenance in a position of flexion and abduction. Stability is accomplished either with a Frejka pillow splint, a Pavlik harness, or a plaster hip spica cast if the hip is particularly unstable.

Between the ages of 3 and 18 months, treatment consists of continuous traction for two to three weeks to lengthen the tight adductor muscles, followed by a subcutaneous adductor tenotomy and gentle closed reduction of the joint. Finally, the hip is maintained in a position of flexion and abduction using a spica cast, as described above.

Beyond the age of 18 months, dysplasia of the structures in the hip joint are less reversible. Closed accurate articulation of the femoral head in the acetabulum becomes difficult and operative treatment is indicated. The procedure which provides optimum results is the innominate osteotomy, first described and performed by Salter, which redirects the acetabulum to provide increased coverage of the femoral head and increased stability of the reduced hip when the lower

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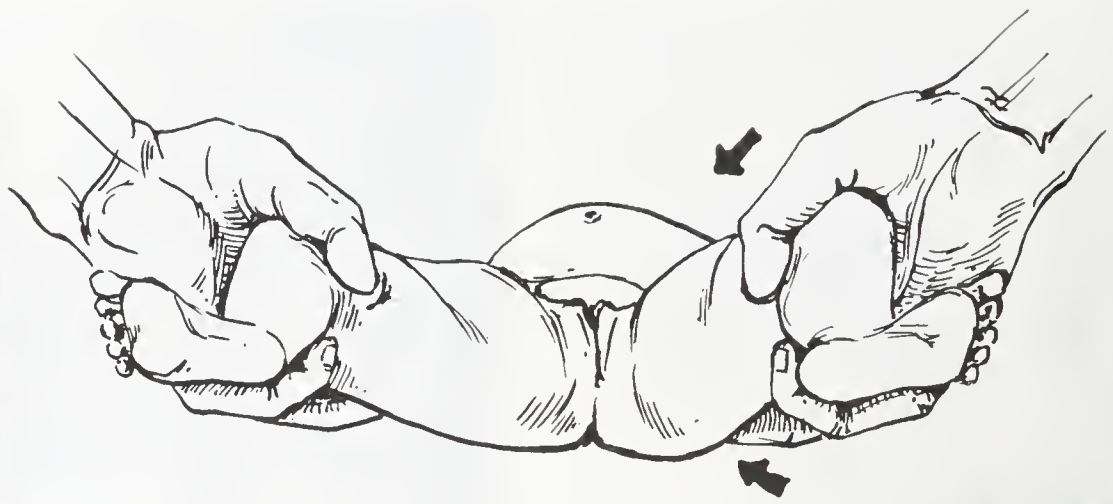
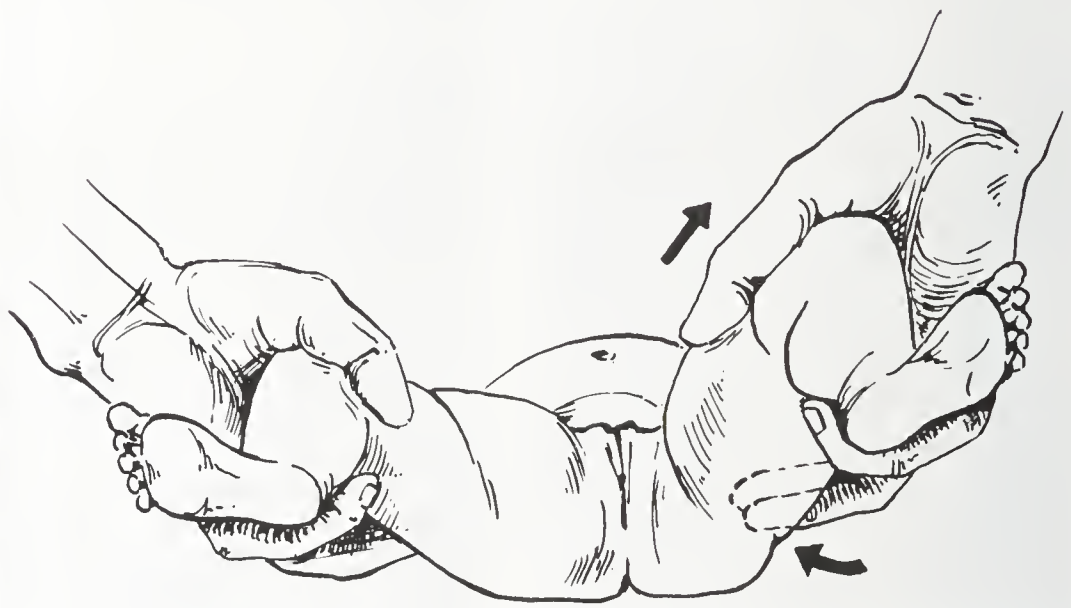
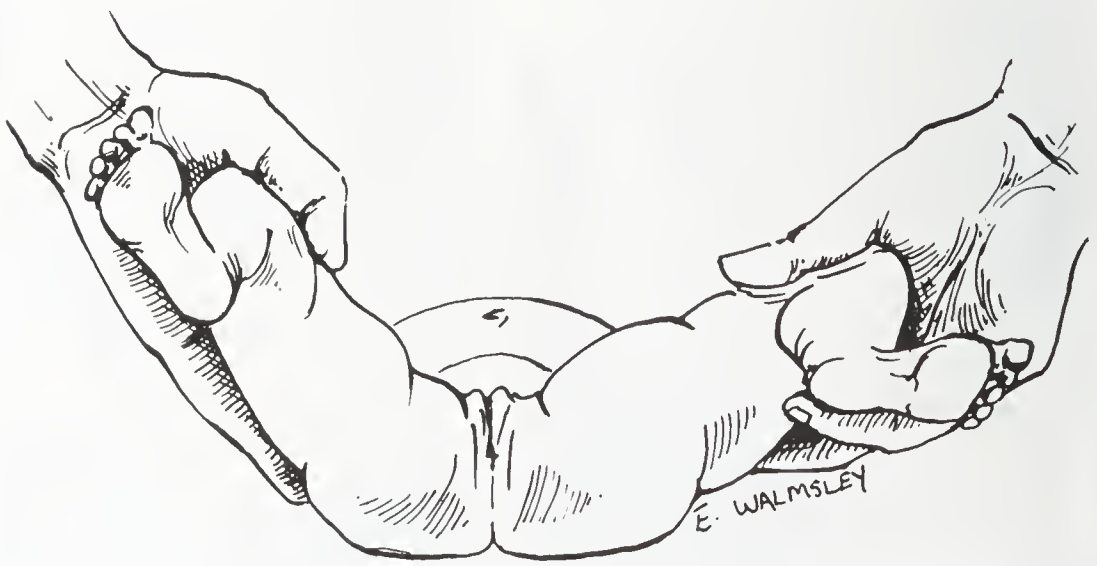


Figure 2: (a) In Ortolani's sign, the flexed hip is slightly adducted while pressing downward along the long axis of the femur. In the presence of instability, the femoral head slides out of the acetabulum.



(b) The flexed hip is then abducted slightly while lifting the femur upward and pressing forward on the greater trochanter. As the femoral head is reduced into the acetabulum, a click is heard.



(c) Limitation of passive abduction is more apparent after the first month of life.

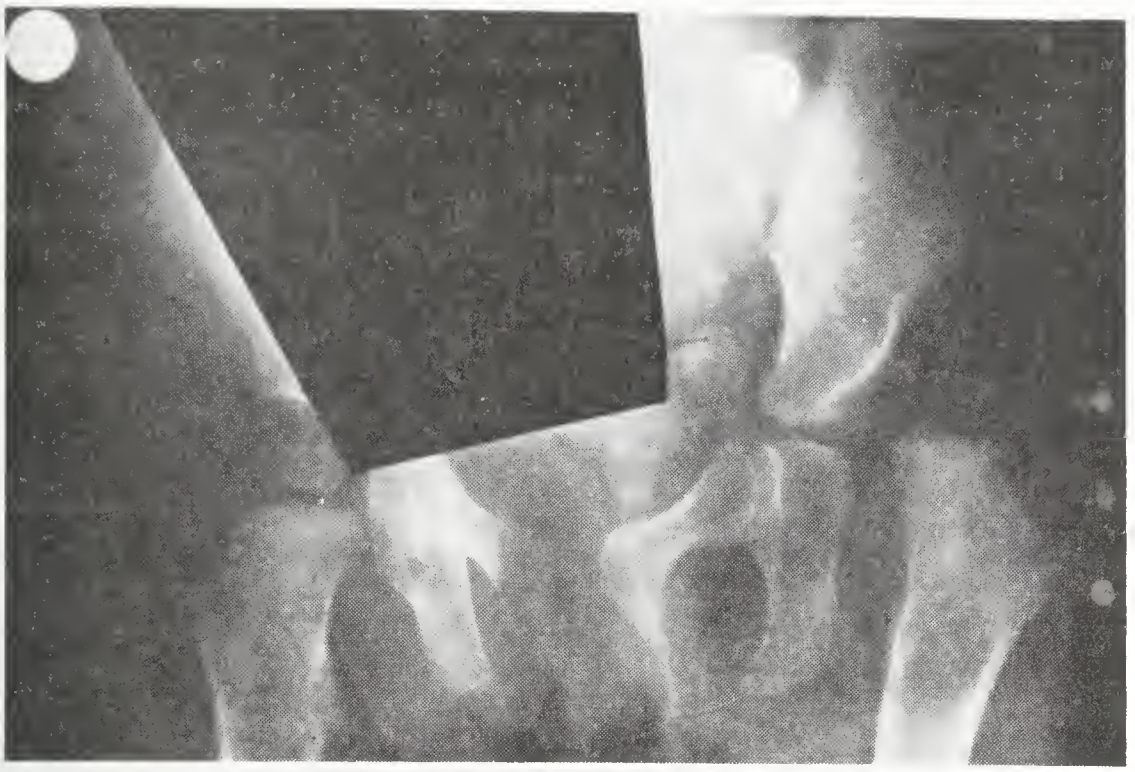


Figure 3: Radiograph showing a dislocated left hip in a two year old girl.

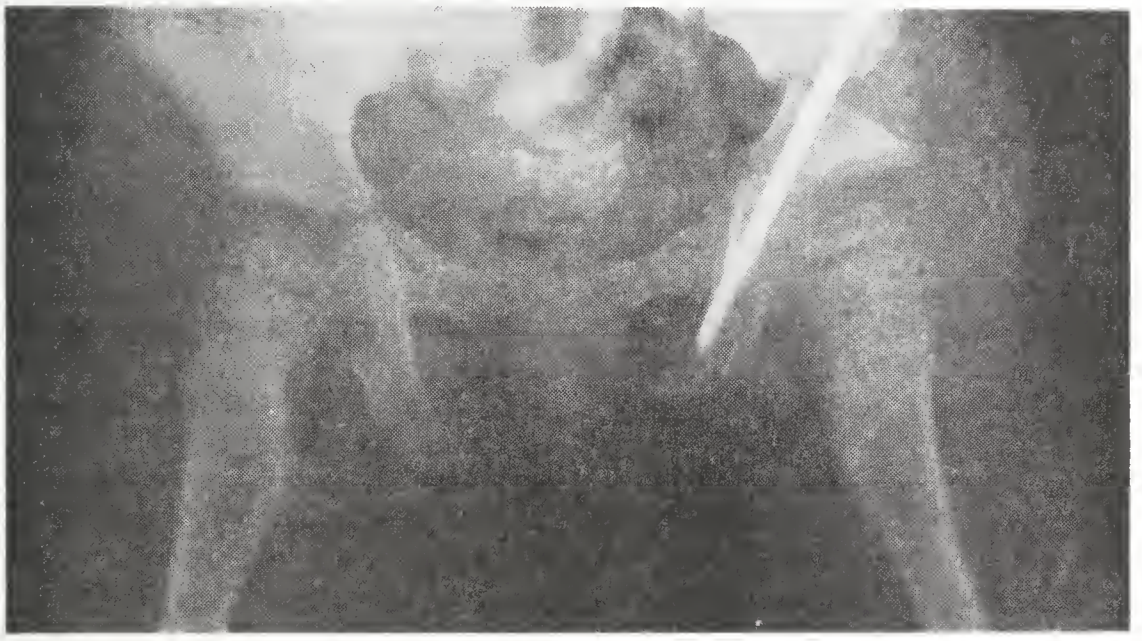


Figure 4: Post-operative radiograph of the same patient as in Figure 3. Note the Kirschner wires holding the bone graft. The Salter innominate osteotomy was performed following continuous traction of the affected hip for two weeks.

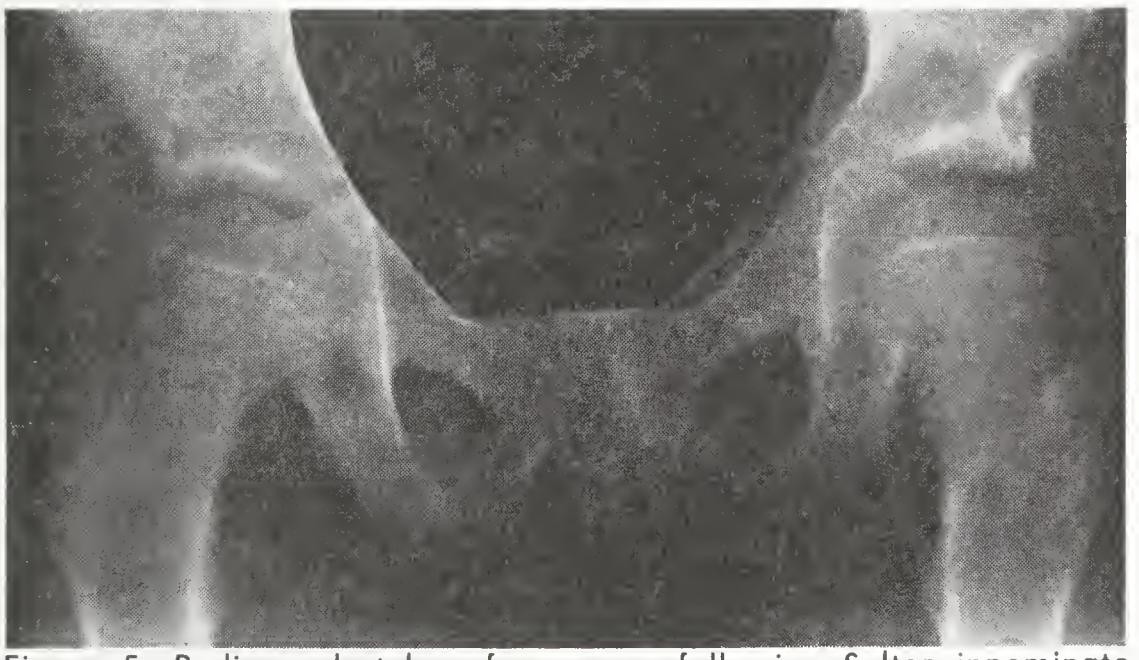


Figure 5: Radiograph taken four years following Salter innominate osteotomy. Note the increased coverage of the femoral head in the affected side compared to Figure 3.

limb is in the functional position of weight-bearing (see Figs. 3, 4 and 5).

Conclusion

The main culprit in congenital dislocation of the hip appears to be undue laxity of the joint capsule at birth. However, certain practices, including passive extension of the infant's hips, may exacerbate the situation.

Dislocation of the head of the femur from the acetabulum can give rise to potentially irreversible secondary changes which eventually result in premature degenerative arthritis. To avert this disastrous consequence, an examination of every newborn child with provision for early institution of treatment is imperative. □

Acknowledgement

The author would like to thank Dr. Robert B. Salter for his guidance and support in the writing of this article.

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Trials of Ascorbic Acid in the Management of Surgical Patients

Meldon Kahan 8T2

This article summarizes research on the role of ascorbic acid (AA) in the management of surgical patients. Three trials have given conflicting evidence on the value of AA in the prevention of deep venous thrombosis; one trial had promising results in the treatment of pressure sores. Evidence indicates that surgery causes a decline in blood ascorbate levels, and that this decline may be associated with an increased incidence of thrombosis and wound dehiscence. Proposed mechanisms are speculative. A low blood ascorbate level may lead to subendothelial hemorrhage, resulting in thrombosis. AA may increase the synthesis of PGE1, leading to decreasing platelet aggregation. AA may increase wound healing by increasing the rate of formation of collagen. A further double-blind trial is needed to assess the role of AA in the management of surgical patients.

Commonly known as Vitamin C, ascorbic acid (AA) is a physiologically active reducing agent in normal human metabolism. This article is a brief review of the literature on the clinical trials of AA in the management of surgical patients.

Deep Venous Thrombosis

Two clinical trials have assessed the efficacy of AA supplementation in the prevention of deep venous thrombosis in surgical patients. In one double-blind study (Spittle, 1973), thirty patients were given one gram of AA daily from the day of their admission until two weeks after their operation; thirty-three patients were given placebo for the same time period. I^{125}-fibrinogen and clinical evaluation were used to determine the presence of deep venous thrombosis following the operation. The treatment group fared substantially better than the placebo group, as shown in Spittle's table (Table I).

In another double-blind study (Taylor, 1979), twenty surgical patients were administered one gram of AA per day, and twenty-three were given placebo, from seven days prior to surgery until the day immediately before. The presence of deep venous thrombosis was determined by radioactive fibrinogen. No statistically significant differences in the incidence of thrombosis or in the "thrombus score" (number of days with elevated radioactivity) emerged.

A third double-blind study (Andrews, 1973) involved 538 non-surgical patients admitted to a geriatric hospital. Half were given 200 mg of AA daily for one month, and half were given placebo. In noting the incidence of cerebral and coronary thromboses, no statistically significant differences between the two groups were found.

Spittle's results conflict with those of Taylor and Andrews. This may be due to differences in the protocol of the studies. Spittle had one gram of AA administered for two weeks following surgery; Taylor stopped the AA the day before surgery. Since blood AA levels drop markedly after surgery (as will be discussed later), Spittle's protocol seems more appropriate. Andrews, on the other hand, did not use surgical patients as subjects, nor did he assess the incidence of deep venous thrombosis. The dose used was one-fifth that used by Spittle and by Taylor. Loh (1973) criticized Andrews' study on the basis that the dose would have to be given for fourteen weeks before tissue saturation were obtained. Thus a proper replication of Spittle's study is needed before her findings can be accepted or rejected.

Pressure Sores

One double-blind trial (Taylor, 1974) examined the efficacy of AA in the treatment of pressure sores in surgical patients. Ten patients were given one gram AA daily for one month, and ten were given placebo. Serial photography and ulcer tracings were used to measure the surface area of the ulcers. After one month, the treatment group had an 84% reduction in surface area, while the placebo group had a 42.7% reduction. This difference is statistically significant at the 99.5% confidence level. Six pressure sores in the active group healed completely, compared to three in the control group. The mean rate of healing was 2.47 sq cm per week in the active group, compared to 1.45 sq cm per week in the placebo group. Taylor's results are encouraging, but to my knowledge, no attempt has been made to replicate them.

	AA	Control	Probability of occurring by chance
One leg affected	10 (33%)	20 (60%)	<.05
Two legs affected	0	10	<.001
Pulmonary embolism	0	3	>.05
Physical signs	1	12	<.001
Total no. of patients	30	33	

Table I: Results of administering 1 gm ascorbic acid(AA) daily to surgical patients from the time of admission until two weeks postoperatively. Control group was given placebo. (Spittle, 1973).

Leukocyte Ascorbate Concentration

Several studies have examined the effects of surgery on leukocyte ascorbate concentration (LAC), as measured in micrograms per 10^8. McGinn (1976) found that the LAC of patients with ulcers decreased after surgery. The fall was particularly marked in those patients who had received blood transfusions before surgery. Taylor (1979), in the study already discussed, found that the LAC in both the treatment and the placebo groups declined steadily from the day of the operation until the third post-operative day. Irvin (1978), in a detailed study of 63 surgical patients, found that surgery resulted in a decreased buffy layer LAC. He found no correlation between this drop and the severity of the surgical trauma or the volume of blood transfused. There was an inverse relationship between white blood cell count and LAC, suggesting that the drop in LAC was due to leukocytosis, and not actual depletion. But the mean leukocyte AA content per liter of blood was 42 per cent lower on the third post-operative day than it had been post-operatively; this demonstrated that depletion had occurred.

Irvin suggested that the depletion was a result of increased utilization of AA by the adrenal gland, following surgical trauma. This opinion is shared by other authors (Wilson, 1973). The adrenal gland has the highest concentration of AA in the body, but the exact role of AA in the synthesis or release of adrenal hormones is not yet known.

Two studies have shown a correlation between the blood AA level and the clinical status of the surgical patient. Crandon (1961), in a study of 287 surgical patients, found that 115 had low AA levels at the time of surgery. Among these, 16 (13.9%) had wound dehiscences following surgery, compared to three (1.7%) in the control patients with sufficient levels of AA. Irvin (1978), however, questioned the techniques used by Crandon to measure blood AA. Taylor (1973), in the study already discussed, compared the LAC level in patients who developed a thrombus with those who did not. He found that, between day three and day six post-operatively, an increase in LAC occurred in the non-thrombus group, but a decrease occurred in the thrombus group. The LAC had a statistically significant inverse correlation with thrombosis by the sixth post-operative day (Spearman's rank correlation coefficient $-.303$; $p < .05$).

Thus, evidence indicates that LAC decreases following surgery, and that low LAC levels are associated with increased wound dehiscence and with thrombosis. The clinical significance of this, however, is uncertain: they may be merely associated phenomena, and not causally linked. (Even if they are shown to be causally linked, a low LAC level would be only one of several other risk factors—e.g., venous stasis.)

Postulated Mechanisms of Action

How AA might prevent deep venous thrombosis is a matter of speculation. One intriguing hypothesis contends that low levels of AA might lead to subendothelial hemorrhages which, by disruption of the vessel wall, could subsequently lead to thrombosis. AA is known to be essential for the hydroxylation of proline, and hydroxyproline is an important constituent of collagen. Collagen is needed for the maintenance of the integrity of the vascular wall, making up a large part of the intercellular ground substance (Wilson, 1980). In scurvy, therefore, vascular integrity is compromised: there is weakening of the adventitia, media, and basal lamina of blood vessels. This results in hemorrhages into skin, hair follicles, nailbeds, joints, and muscles of the extremities; intracerebral and retrobulbar hemorrhages; bleeding of the gums; and increased capillary fragility (Nossel, 1980).

Clemetson (1979) has suggested that low levels of AA predispose to subendothelial hemorrhages (in addition to the hemorrhages mentioned above), resulting in thrombosis. In scurvy, phlebothrombosis is common, although it is thought to be secondary to hemorrhages deep in the calf muscles (Sebrell, 1973). Experimentally-induced scurvy in man can also produce a clinical picture similar to coronary thrombosis and thromboembolism (Clemetson, 1979; Krebs, 1953).

Of course, it could be argued that scurvy is very rare among surgical patients, and therefore, blood AA levels, while perhaps low in a statistical sense, could not possibly have any pathological significance. There is evidence, however, that low blood levels of AA that are sufficient to prevent scurvy might not always be sufficient for optimum health. For example, diabetics seem to have an abnormal AA metabolism (Sarje, 1979). In one cross-over study (Cox, 1975), six diabetics were given one gram of AA per day for two months, and then were given placebo for one month. In six other diabetics, this procedure was reversed. Capillary strength was measured by applying pressure until petechiae were observed. Eye fundi were also examined. All twelve subjects had improved cutaneous capillary strength during the treatment period. Four of the six subjects who were given AA followed by placebo, however, deteriorated while on the placebo. Cox observed no retinal changes in both cross-over groups. Thus, while none of the patients had scurvy, AA supplementation was nonetheless able to produce a measurable effect.

In another double-blind study (Schorah, 1979), 118 geriatric

patients with low plasma and leukocyte levels, but no signs of scurvy, were given either one gram of AA per day, or placebo, for 28 days. Schorah noted the subjects' appetite, weight changes, daily living activities, and interest in their surroundings. The overall improvement of the treatment group was greater than the improvement in the placebo group. The difference, while not large, was statistically significant.

There is some evidence that AA decreases platelet aggregation, and increases fibrinolytic activity, thus suggesting another mechanism whereby AA might prevent deep venous thrombosis. Sarje(1979) found that two grams of AA per day, given for seven days to healthy volunteers, inhibited *in vitro* platelet aggregation induced by ADP, epinephrine, collagen, and arachidonic acid. Horrobin (1979) suggested that AA enhances the conversion of dihomogamma-linoleic acid, an essential fatty acid, to prostaglandin E1. Contained in platelets, PG E1 inhibits platelet aggregation.

Bordia (1978) measured the serum fibrinolytic activity of forty volunteers before and after the administration of one gram of AA. Six hours after the AA was given, the fibrinolytic activity was 130% higher than before. Crawford (1975), however, found no change in coagulation, fibrinolytic activity, or platelet adhesiveness, after giving 24 healthy volunteers one gram of AA daily for three months. Bordia has suggested that Crawford obtained negative results because he had measured these parameters 24 hours after the last dose of AA had been given, by which time AA had lost its effect.

The mechanism whereby AA might decrease wound dehiscence and speed healing of bed sores again relates to its role in the formation of collagen. We know that collagen formation is essential for proper wound healing. And we know that scurvy leads to poor healing of wounds and the breakdown of healed wounds (Krebs, 1953).

Conclusion

The use of ascorbic acid in the prophylaxis of deep venous thrombosis and the therapy of pressure sores has been considered. The evidence supporting AA supplementation for surgical patients, while promising, is not strong enough to be convincing. It is hoped that another double-blind trial will be conducted to resolve the issue. In such a trial, the dose of AA should be at least one gram per day, administered from the day of admission until several weeks after surgery. Deep venous thrombosis, bed sores, and possibly other complications of surgery, ought to be carefully assessed. If ascorbic acid does prove to be of benefit, its relative lack of toxicity will make it an ideal medication. □

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Is Active Involuntary Euthanasia Ever Justifiable?

Pro:

How can anyone concerned with the health of human beings justify Active Involuntary Euthanasia? He cannot in any sweeping away. On the other hand, can he categorically state it is *never* justifiable? I think he cannot do that either.

Contemporary opinion on the propriety of euthanasia in general is divided; however, Active Involuntary Euthanasia has virtually no vocal proponents (and rightly so). This is a question to be quietly decided in relevant cases between physician, family and possibly an ethical consultant. I am personally uncomfortable with the concept, but I believe in Medical Ethics there is no 'never'. The issue is not whether Active Involuntary Euthanasia is justifiable, but whether it is *ever* justifiable. These two questions differ just as do, to apply Mark Twain's words, lightning and the lightning bug.

Bizarre circumstances justify seemingly unethical actions. Consider the hypothetical case of a man who is assaulted and suffers a heart attack as a result. A passer-by, a doctor, discovers him and unsuccessfully attempts to revive him by using Cardiopulmonary Resuscitation. Autopsy reveals broken ribs. Interestingly, the breaking of ribs would be unjustifiable if inflicted by the assailants; but justifiable if caused by the doctor. Rare circumstances may even justify Active Involuntary Euthanasia, as I shall attempt to show.

Any relevant example must have, by definition, two elements. Firstly, the termination of life is active (e.g., injection of KCl) rather than passive (e.g., withdrawal of life support). Certain distinctions have been named between these two approaches: active euthanasia involves more guilt for the physician and is more directly at cross-purposes with his healing role. However, the end result, the patient's death, is the same, so it seems hypocritical to condone the passive, but not the active, method. Secondly, the patient's direct consent is not obtained. Clearly, we cannot oppose a patient's desire to live; but if he cannot responsibly decide his own fate, the onus returns to the physician.

The situation of a neonate with a congenital disease of early onset, poor prognosis and irreversible mechanism has both these elements. In Tay - Sachs Disease, for example, the infant's life is characterized by progressive retardation in development, paralysis, blindness and death by age three or four. Some parents may want to

(continued on page 23)

Con:

Any situation in which the deliberate administration of euthanasia is considered is bound to be an extremely painful one, particularly if the subject is unable to participate in making the decision. But without belittling the stress incurred by allowing the person to live, there are extremely good reasons for believing that involuntary euthanasia ought never to be applied.

The first of these is concerned with the fate of the person involved. No matter what his condition, to end his life is an irrevocable act, destroying with finality any hope and possibility that his condition might improve. It is to claim a foresight into the future health of an individual which denies that a rejuvenating factor may be involved. Considering the complexity of the human body, this is a rather pretentious claim.

If the individual's personal suffering is felt to be a factor in favour of euthanasia, several contradictions quickly become apparent. First, if the person is unconscious, it is difficult to prove that he is physically in pain to an acute degree. Further, his personal dignity cannot be at stake, for dignity is something he cannot be aware of. In the case of the unconscious patient, it is not he who suffers pain but rather the people around him. It is they who feel the distressing loss of spontaneous respect for the person, while a natural and instinctive aversion for the very ill takes its place.

But might not the suffering of the people around the person in question be sufficient reason to end that person's life? Might the person himself not wish it, if he could, for the sake of others? The following reasons for rejecting this argument are identical to the reasons for rejecting the deliberate application of euthanasia to a person who is conscious, without that person's consent.

It would be manifestly ridiculous to argue that this type of situation could be equally well relieved by terminating the lives of those who are suffering because of the individual. But in spite of the absurdity of this argument, it points to the principle employed if the death of a person is considered for the sake of others. It is the principle that an individual is valuable only to the extent that he can actively contribute to society. Even if this were to be accepted as a universally valid principle, it nevertheless remains the case that the individual, if allowed to live, is making a contribution to society. He is a representation to

(continued on page 23)

The Artificial Pancreas

Davy C.H. Cheng, M.Sc., 8T3

Maintenance of normal blood sugar levels in the treatment of diabetes mellitus is often difficult with subcutaneous administration of insulin. The "artificial pancreas", a "closed-loop" feedback system, relies on continuous blood glucose sensing to deliver insulin and glucagon to the diabetic patient. The more recently developed "open-loop" system delivers pulses of insulin, without conducting continuous blood glucose sensing; it is portable, and may be more advantageous in long-term trials.

In 1921, Banting and Best, at the University of Toronto, prepared an effective pancreatic extract capable of reversing the metabolic deviations of experimental and clinical diabetes mellitus. Since then, insulin has extended the lives of millions of diabetic patients throughout the world. The work of Banting and Best provided the final, necessary evidence that the pancreas was an essential endocrine gland in blood glucose homeostasis.

Diabetes mellitus is a syndrome of absolute or relative insulin deficiency. Insulin-dependent diabetic patients have traditionally relied on subcutaneous bolus injections of beef or porcine insulin. Although such therapy has been shown to prolong life, the exogenous, non-physiologic compensation of insulin deficiency does not achieve glycemic normalization; as a result, the degenerative complications of diabetes mellitus still develop.

Now, however, new mechanical devices, designed to imitate the secretory function of the pancreatic islets, are being developed and refined by Dr. A.M.Albisser, and his associates, of the Artificial Pancreas Programme in Toronto. The bedside "closed-loop" system ("artificial B-cell") normalizes measured blood glucose in both fasting and fed states, by means of continuous extracorporeal glucose sensing. More recently developed is the portable external "open-loop" insulin-delivery device, which can be programmed to achieve similar results in long-term studies, without the need for continuous glucose sensing.

What is an Artificial Pancreas?

The Closed-Loop System

The artificial pancreas constitutes man's first mechanical imitation of an endocrine gland. This is a feedback-controlled device composed of a glucose sensor, a computer, and a delivery mechanism. These components are connected into a closed-loop system (Fig. 1). By means of an in-dwelling dual-lumen catheter, peripheral venous blood is drawn into a modified analyser for continuous blood glucose measurement. The computer receives and interprets the electrical signals generated by this glucose sensor. In accordance with its internal pre-programmed algorithms, the computer instructs the hormone delivery pump to deliver insulin, the amount varying according to the level of blood glucose and its rate of change. Similarly, glucagon or dextrose may be administered in a counterregulatory manner, should a tendency to hypoglycemia supervene.

Continuous Glucose Analysis

The continuous withdrawal of whole blood at a rate of 3 ml/hour allows sufficient sensitivity and resolution to detect changes on the order of 1 to 2 per cent in blood glucose concentration. The glucose analyser consists of an autoanalyzer utilizing a modified glucose-oxidase peroxidase method.

The use of a double-lumen catheter overcomes the problem of clotting in the long-term withdrawal of blood. This catheter restricts the presence of anti-coagulant (heparin) to the area of blood withdrawal, preventing its spread into the general circulation. Inside the tip of the in-dwelling outer lumen—formed by a needle, a plastic catheter, or a tapered plastic cannula—blood is initially mixed with heparin as it is withdrawn.

Computer Algorithms

In the closed-loop regulation of blood glucose, three sets of relationships are employed to translate information from the glucose sensor into rates of delivery of two hormones: insulin, if the glycemia is too high, and glucagon, if it is too low. Details of the mathematical models and computer simulations of glucose regulation have been extensively described in several reviews (e.g., Albisser, 1979; Botz, 1976). In general, two of the relationships involve sigmoid-shaped curves relating insulin and glucagon delivery rates to

the measured level of glycemia. The third relationship is a difference factor which depends on the rate of change of blood glucose. This non-linear rate-dependent relationship is applied not only to augment insulin delivery at euglycemic levels, but also to attenuate insulin delivery when blood glucose concentrations begin to fall at even hyperglycemic levels.

Hormone Delivery Systems

The artificial pancreas delivers two hormones: insulin, to correct hyperglycemia, and glucagon, to correct hypoglycemia. Regular porcine crystalline-zinc insulin is diluted in pH-adjusted normal saline to a final concentration of about 0.4 U/ml. Glucagon is diluted in the usual manner, and normal saline added, to a final concentration of 100 ug/ml. Disposable intravenous tubing sets connect the two hormone solutions to two pumps. A third pump, of the same type, delivers saline at a constant minimum rate. The output of each pump flows through a separate tube; the three tubes meet remotely at a triple-input adaptor. The output of the latter is connected to the cannula inserted in the patient. Computer algorithms control the flow rates of the hormonal solutions.

Clinical Applications

Although heretofore used mainly for investigative purposes, the closed-loop system has several applications of therapeutic benefit:

1) The system is automatic and can restore to the diabetic patient a pattern of secretion similar to that of the healthy pancreas. Hypoglycemic or other side effects experienced by the patients have not been reported.

2) The artificial pancreas significantly improves the oral glucose tolerance test (OGTT) in diabetic patients. In contrast, no form of conventional therapy—diet, subcutaneous insulin, or oral hypoglycemic agents—can restore to the diabetic a normal OG TT.

3) Acute application of the artificial pancreas to restore normoglycemia in the resting state, and maintenance of normoglycemia by the appropriate basal rate of insulin delivery, successfully counteracts the glucose-catabolic effect of moderate exercise, lowers the rate of glucose appearance to near-normal values, and suppresses the amount of immunoreactive glucagon to normal levels.

4) Diabetic ketoacidosis and coma has been successfully treated, using the artificial pancreas,with concomitant infusions of sodium bicarbonate and potassium.

5) The artificial pancreas provides a unique means of assessing the profound action of somatostatin on pre- and post-prandial insulin and glucose requirements.

6) The device has been successful in treatment of diabetic patients during surgery, and during labour and delivery.

7) By applying it to pancreatectomized as well as hypophysec-

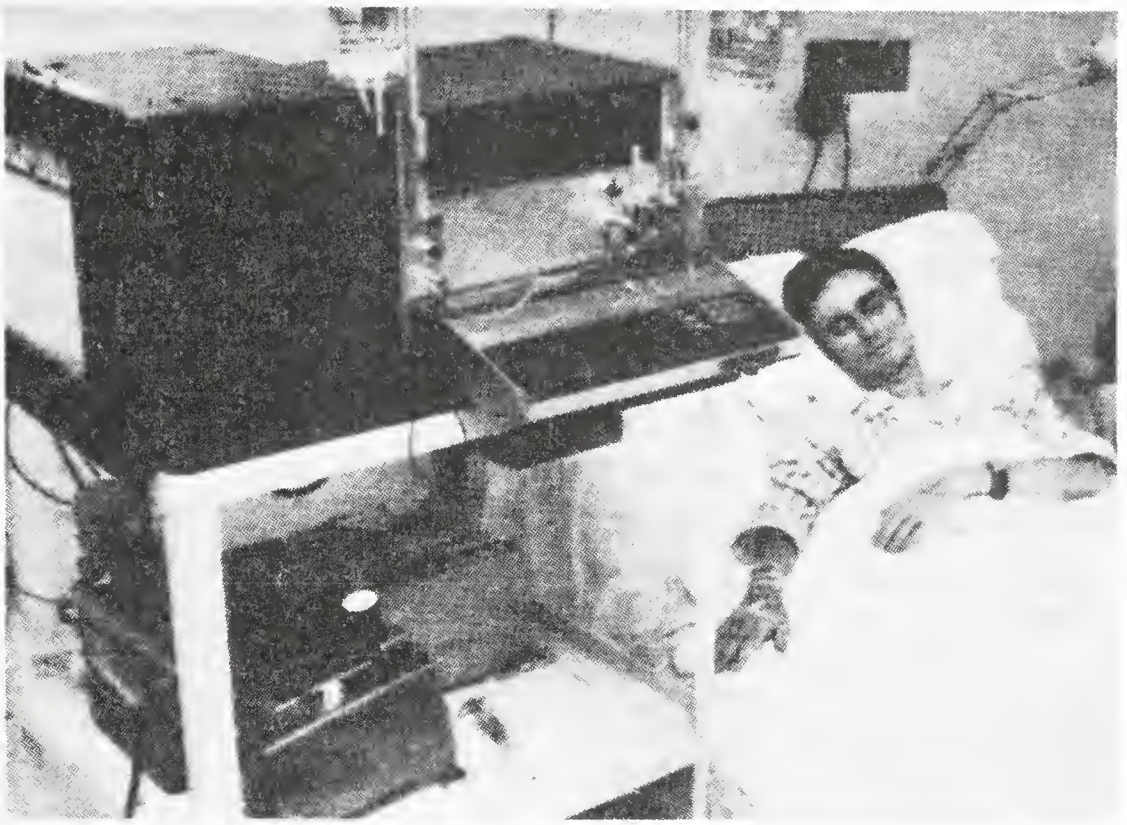

Figure 1: The closed-loop artificial pancreas apparatus used in the Clinical Investigation Unit of the Toronto General Hospital. The glucose analyser(pump, dialyser, colourimeter, and chart recorder) are from Technicen Instruments. The control Unit(pumps, keyboard, and computer) are from Life Science Instruments.

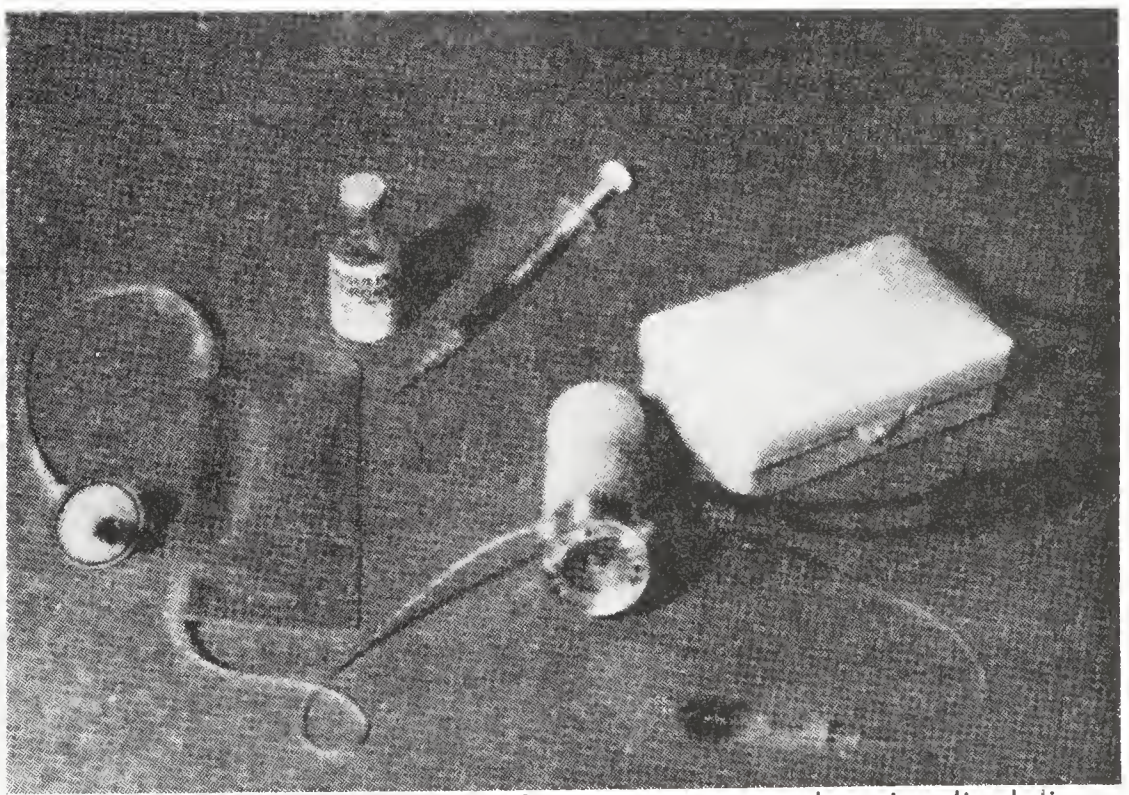

Figure 2: The three components of a prototype open-loop insulin delivery device. A miniature precision peristaltic pump(centre) meters the flow of insulin from the reservoir(left) according to a waveform pre-programmed into the controller included with the battery power pack(right). Reservoir is refilled through a bacterial filter(far left) and insulin vial and syringe(background) indicate scale.

tomized patients, the artificial pancreas has been used to indicate the actual insulin and glucose requirements in cases of chronic hypoglycemia due to insulinoma.

Two factors limit the long-term use of the artificial pancreas: its size, and the blood loss required for continuous extra-corporeal glucose sensing.

Open-Loop Systems

The open-loop systems (Deckert, 1976; Genuth & Martin, 1977; Albisser et al., 1978) differ from the closed-loop systems with respect to size, the former's portability, and its absence of a continuous glucose sensor (Fig. 2). This system sacrifices the precision and self-adaptation of the closed-loop system, while endeavouring to supply insulin at predetermined rates. Insulin is delivered according to waveforms, resulting in a basal rate in the fasting periods, and one or more elevated rates (pulses) at various times either before or during meals. The pulses can be manually activated at meal time either by the subject himself or by the experimenter. The device subsequently executes the preprogrammed waveforms, without regard to actual blood glucose levels.

With this approach, long-term studies have been successful and encouraging. The extension of these results will represent an exciting advance in the treatment of insulin-dependent diabetes mellitus.

The Hollington Award

Last year the Medical Alumni Association received a very generous gift from Dr. Mary Hollington , Meds. 4T4 to provide for an annual award.

Dr. Hollington and the Executive Committee of the Medical Alumni Association have agreed to create an annual award for a teacher who is popularly recognized to excel in his or her position, and who most represents the "ideal" teacher.

We need **your** help!

We want **your** suggestions on how such a teacher can best be selected each year. To do this we are offering a hundred dollar ($100.00) prize to the medical student whose suggestions in a letter are most helpful to establish the criteria for the award. The competition will have to be closed by December 31, 1980.

Dr. Hollington found herself in Canada, having come over from England, at the outbreak of the Second Great War. She couldn't receive support from her family in England but was nevertheless accepted into the U. of T. Medical College. She very satisfactorily completed her course of studies at Toronto and subsequently returned to England where she has practiced General Medicine for more than thirty years.

She has been most grateful to the U. of T. Medical College and on her first visit back in 1979 she presented her generous gift to the Alumni Association as a token of her appreciation.

Please submit suggestions to the Medical Alumni Assoc. office, Room 3245, Medical Sciences Building.

Acknowledgement

The author gratefully acknowledges the advice and final review of this article by Dr. A. M. Albisser, Director of the Artificial Pancreas Programme at the Hospital for Sick Children, Toronto.

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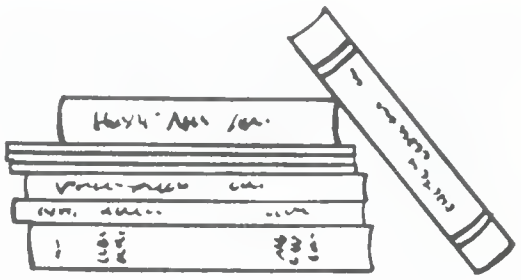
Book Review



Buffing and Turfing the Gomers

Robert Hegele 8T1

The House of God

by Samuel Shem
(A Dell Paperback, $2.50, approx. 400 pp.)

Samuel Shem's novel *The House of God* is a good book and I would recommend it to any medical student who plans to practise medicine in the future. This is, essentially, the message I want to get across, so anyone who has to get back to less mundane, academic pursuits may do so, without feeling guilty about not reading the remainder of my cogent and incisive review of this book.

I happened to discover *The House of God* on the first day of my clinical clerkship elective at the University of South Florida. The residents and interns drawled, in the unmistakeably southern American fashion, through the many familiar and usual medical terms when talking about patients. Once in a while, however, they would spew forth an item or two from a cliquish lexicon. These words would tend to fly over my head: "gomers", "walls and sieves", "buffing and turfing". Googooeyed, I sheepishly asked about the meanings of these terms. The house staff looked at me down the lengths of their respective upturned noses and asked (practically in unison): "You mean, you've never read *The House of God*?". To which I responded: "What is *The House of God*, anyway?".

The House of God is a satirical novel about the internship year of a graduate of the Best Medical School in America (BMS). The House of God itself is the pseudonym for a large general hospital in an unnamed megalopolis (probably the Mount Sinai Hospital in New York City). The book is officially categorized as a work of fiction, although anyone with some knowledge of medicine and hospitals will see that it is based, in fact, on the steely reality of daily hospital life. There is enough technical language used to necessitate including, at the book's end, a brief, and often witty, glossary of medical terms for lay people. And while the story's narrator, 30-year-old Rhodes scholar Roy Basch, is a fictional protagonist, he is the voice of Samuel Shem, the author. Shem (now a doctor) has written a retrospective (or retrospeculative) look at his internship and what it meant to him.

The plot is simple. We follow Basch and his intern pals as they revolve through their rotations at the House of God. The book is basically a string of anecdotes and short stories which deal with experiences with clinicians, residents, nurses, patients, and people on the outside (people in the real world). Shem has the advantage of being intimately familiar with the activities and procedures which he describes. The fact that the book is fictional, however, gives him sufficient license to exaggerate (which he does often, and with style). He exaggerates about the repressed disdain which young interns have for old, demented patients who seem to live indefinitely. He exaggerates about the arbitrariness behind many of the life-and-death decisions in clinical medicine. He exaggerates about the stresses under which interns must live; about the criticism and chastisement from the higher-ups (the residents and staff), and the hindrances from the lower-downs (clerks looking for honours). He exaggerates about the breakdown of external relationships as interns are moulded into icemen who become numb to death, suffering and human emotions. He exaggerates about sexual exploits between interns and submissive nurses (in call-rooms, on ward halls, on top of comatose patients(!)). But these exaggerations have their roots in real issues and experiences. The lay public, nurtured on a diet of Marcus Welby, would probably laugh nervously at Shem's portrayal of these events. The medical person laughs with confidence at the absurdity of some of these situations, but later feels nervous as she or he thinks about now, in essence, they are true, and how he or she may have reacted, given similar circumstances.

The House of God is a funny and well-written book. Shem has a way with aphorisms ("As usual in my medical training, knowing nothing, I was put in charge of all on my first night on call.") and bizarre imagery,

> "A horrible thought crossed my mind, horrible because for an instant it didn't seem horrible, like seeing a baby and thinking of putting an icepick through its skull".

Shem mixes his good sense of humour with good common sense, something which he claims has been lost in an academic hospital setting. Much of the horse sense comes from the mouth of Roy's friend and mentor, the Fat Man. Fats is the cynical, experienced, hardened resident who ploughs ahead against the grain of the medical establishment, feared by the hierarchy for his unorthodox views, but valued for his expertise and singular eptness as a clinician. The Fat Man is a pillar of stability as

Roy and his buddies watch the foundations of their medical school training crumble in the face of clinical pressures. The Fat Man is a friend. The Fat Man is the source of most of the Thirteen Laws of the House of God (e.g., Law XII: "If the Radiology resident and the Medical student both see a lesion on X-ray, then the lesion cannot exist.") The Fat Man points out the advantages of pursuing careers in the NPCs (no-patient-care specialities) which are Radiology, Anesthesia, Dermatology, Ophthalmology, Pathology and Psychiatry (and why smart M.D.s pursue the NPCs).

The peculiar technical vocabulary used by the main characters is introduced by the Fat Man. A "gomer" (the acronymn for "Get Out of My Emergency Room") is "a human being who has lost—often through age-what goes into being a human being". By the end of the novel we understand that gomers are old demented, incontinent, apractic, non-contributory people who do not themselves want to live. In fact, 20 years ago they would probably have died before reaching the gomer state but the research and gimcrackery of current medical science has allowed them to keep breathing and pumping blood. The effective lifespan, however, is unchanged. Another cute term is "buffing". To "buff" means "to polish something to make it look good" as we are all familiar with from biochemistry labs and genetics assignments. In clinical medicine, buffing usually means to alter a patient's chart to make it look good to the clinician. In this way, a sick patient can be made to look well before "turfing" him to another service. "Turfing", incidentally, means "to get rid of in any way possible", the ultimate goal for most patients in the Fat Man's fat eyes.

Ray Basch's intern colleagues, Chuck, Hooper, Potts, the Runt and Eat My Dust Eddie, all have their idiosyncratic perversions and peccadilloes. They are a bunch of wild and crazy guys. It's easy to recognize someone you know in at least one of them. Roy's girlfriend Berry is a patient, understanding psychoanalytic martyr, a sort of hybrid of Sister Theresa and Anna Freud. She all but gives up on our hero before coming back to him by the end of his year. But enough about the characters and plot. This is the type of book about which you can say simultaneously too much and too little about the content.

The novel has its share of serious, insightful commentary on the medical education system and on medicine in general. For these thoughts alone the book is worth reading:

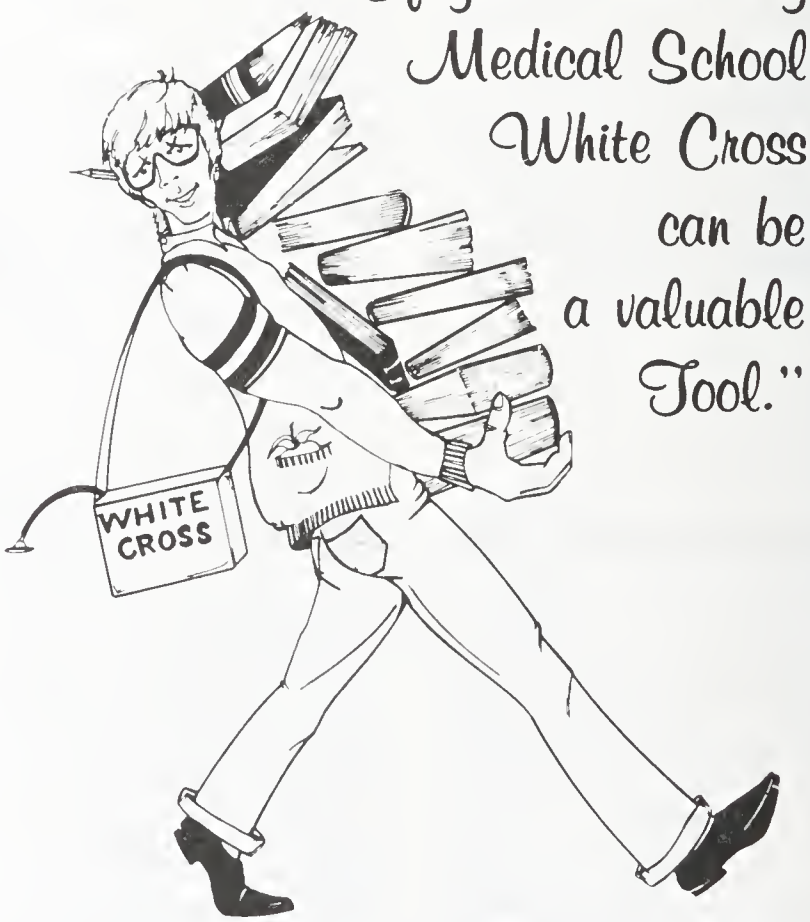
> Lethal, this becoming a doctor. Denying hope and fear, ritualized defenses pulled up around ears like turtlenecks, these doctors, to survive, had to become machines, sealed off from humans, from wives, kids, parents-from the warmth of compassion, from the thrill of love.

The true essence of modern medicine is not "healing the sick", using the wonderful knowledge which we spend years learning in medical school. Shem says, instead, that a doctor's primary role is "to be there", to care, to show interest, to try to do his or her best, and to let the patient appreciate it. By the end of the novel, Roy abandons his goal of doing a residency in internal medicine, and instead, takes a year off to go to France and reassess his life as he saw it, as society saw it, and as the medical establishment saw it.

There are the age-old conflicts in medicine: academics versus personality, the doctor's brain versus the doctor's heart, quality versus quantity. Where should the stress lie? The people who run our medical education system believe they know. The author of *The House of God* thinks he knows. I suspect the realistic view lies between these two extremes, something which each doctor has to decide for herself or himself.

Try to get hold of a copy of *The House of God*. At least you'll be entertained. Hopefully, you'll be motivated to think about your, and our profession's, future. □

"If you're attending Medical School White Cross can be a valuable Tool."



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Pro:(continued from page 18)

save their child this suffering. Active Involuntary Euthanasia is conceivably justifiable in this instance. (It is interesting to note that virtually all parents whose fetuses are prenatally diagnosed as having Tay - Sachs Disease opt for therapeutic abortion.) Other justifiable situations, such as some cases of coma, exist; but for reasons to be outlined at the end, I shall not present any more.

It can be cogently argued that euthanasia is never justifiable because the concomitant admission that some human lives are not worth living can establish a base from which murder can be legitimized. Leo Alexander argues that this occurred during the Nazi period: "But it is important to realize that the infinitely small wedged - in lever, from which this entire trend of mind received its impetus, was the attitude toward the non-rehabilitable sick."† Because this arguement applies to euthanasia in general, not just Active Involuntary Euthanasia, it is not necessary to discuss it here. Consequently, I have taken as my premise that some types of euthanasia are justifiable.

The reason I de-emphasize specific cases which may justify Active Involuntary Euthanasia is that I would like to induce the reader to feel they may exist, not prove to him that they do exist. My task is not to set ethical guidelines; it is to refute the proposition that Active Involuntary Euthanasia is *never* justifiable. Behind this specific question lies a more important general lesson: ethical rules have exceptions. I remember the words of a friend: "Generalizations are always wrong."□

Peter A. Singer 8T4

Con:(continued from page 18)

all individuals concerned that no matter what befalls them, society will not cast them aside, but will struggle to restore them to a happier livelihood. He allows them the confidence and security of knowing that society will not exercise its power to eliminate those whom the powerful find undesirable, but will rather arm itself to defend and preserve the independent life of each. And it is only when each individual can have this confidence that he will develop his potential to the fullest. Society benefits from this development, while the individual finds it worthwhile that his society benefits.

Still, those most directly involved with the patient will suffer. It is also to these individuals, rather than simply to the patient, that society, and particularly the medical profession, must turn its attention-for the alleviation of suffering is medicine's self-chosen task. Society must be helped to understand that it is worthwhile to lend needed finances and facilities of support. The medical profession, in its turn, must be prepared to do all it can to aid these people in dealing with their emotional distress, helping them to find continuing health in their roles as personal and social individuals.

To continually choose for life may be burdensome, but the ultimate costs of ever beginning the choice for death are far more tragic.□

Wendell Block 8T4

†Veatch, Robert M.; *Death, Dying and the Biological Revolution: Our Last Quest for Responsibility*. New Haven and London: Yale University Press, 1976.

as-so´ci-a´tion

----a voluntary organization of persons joined together to pursue a common purpose or objective common to all.

The Ontario Medical Association is an association of practising physicians, interns, residents and medical students which, under a democratic constitution, pursues not only the advancement of the medical profession but also that of medicine itself. The O.M.A. encompasses all specialties of medicine and represents more than 14,000 physicians and aspiring physicians in the province.

For information on joining the Ontario Medical Association, simply write Anne Todd, Supervisor of Membership, O.M.A., 240 St. George St., Toronto M5R 2P4; or phone 925-3264 (Toronto), 1-800-261-7215 (toll-free, outside Toronto).

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Ontario Medical Association

Abortion As A Historical And Ethical Issue

Luigi Castagna 8T2

This essay discusses the issue of abortion in a historical perspective, and in the context of contemporary social and political circumstances. A knowledge of this, combined with the establishment of rational ethical guidelines, is necessary for every individual to arrive at his or her own moral decision regarding the practice of abortion.

The ethical problem presented by the practice of abortion should be of great concern to physicians, both as responsible citizens, and as professionals who, because of their technical knowledge, are expected to perform the procedure. As citizens often viewed as leaders in their communities, physicians should have an understanding of the social dimensions of the problem. As practitioners faced with advising patients on the matter, as well as defining their own personal conduct, they should be able to base their decisions on relevant premises.

Obviously, a thorough knowledge of the clinical aspects of abortion is essential in guiding us on "how" to perform it, but of little help in telling us "why" and "when".

Unfortunately, some problems just cannot be resolved in terms of the scientific method. Their understanding requires that other philosophical methods be employed. Because of the nature of reality with which it is concerned, science is the only method able to provide universally acceptable answers. Certain premises can be objectively assessed by one's senses, and therefore, universally accepted as true. It is impossible, however, to establish ethical principles based on these premises.

Without using any alternate approach to the scientific method, one can easily make decisions with a lack of rigorous thought. I do not suggest that all physicians should also be philosophers: they do not have the time to explore the intricacies of the different schools of thought, nor do they necessarily have the vocation to do so. However, inductive and deductive reasoning are within everyone's reach. As long as one takes care to establish valid premises, one should be able to establish one's own ethical guidelines, even without an extensive knowledge of philosophy.

In the context of ethics, one can say that a valid premise is one that is relevant to the real world in which each of us is living. This includes the political, social and economic realities, the character of interpersonal relationships in our community, and most important, the way we interpret these factors. The latter is a function of our personality, prejudices, and idiosyncrasies. This multiplicity of interpretations of the "real world" leads, of course, to a multiplicity of valid premises, each being highly relevant to the experiences and actions of the individual.

This article illustrates by using the ethical issue of therapeutic abortion as an example, how someone provided with only an embryonic knowledge of philosophy, like myself, can establish his own guidelines for a rational approach to the problem. The issue I have chosen evokes a highly emotional response in many people, who regard it as a crucial problem of enormous consequence.

A Historical Perspective

A brief glance at the social and historical dimensions of therapeutic abortion immediately deflates the problem to much more realistic proportions, and leaves us wondering how possibly there can be nationwide organizations solely concerned with its solution.

As a matter of fact, therapeutic abortion or, more generally, artificially-induced abortions, have been performed throughout history by a great number of peoples. If the offspring were not eliminated before birth, they certainly would have been afterward through the much cruder, but, in a way, less hypocritical practice of infanticide.

Actually, as many cultures became more affluent, and as a consequence, less accustomed to violence, the practice of infanticide often declined or was prohibited, while abortion concurrently became more common. People could always find a way to rid themselves of their children, if they really wanted to.

The classical example of such a situation is, of course, Imperial Rome

and its decline, as has been pointed out *ad nauseam* by all sorts of gloomy archconservatives, who see the recent changes in North American morals as the prelude to a new age of darkness. As is well known, during the virtuous (and economically meagre) period of the early Republic, the Romans practiced infanticide to rid themselves of little boys if they were weak or ugly, and of little girls, sometimes simply because they were little girls. Later, as imperial expansionism made the Romans wealthy, they no longer waited to see whether the little boy was weak or healthy, or if the hoped-for little boy turned out to be in fact a useless little girl. They did not care: their concern was now birth control.

Lets face it: if you are poor, your children are your pension plan. But if they are crippled, and therefore cannot support you, or if they are girls and therefore get married when you are most likely to need them—children are less useful. If you are in no economic stricture, or if you can look forward to senior citizen benefits, children can simply become a pain in the neck, interfering with the domestic enjoyment of the pleasures life can offer to those who are fortunate.

Let us leap forward now to the Christian era—that is, the Middle Ages. Life was rather bleak at the time, and birth control less desirable. Epidemics, famines, incursions by pirates or brigands—in other words, all sorts of natural and man-made calamities were more than enough to keep the population in check. Little wonder that the "ideology" of the time suggested not becoming too upset about earthly sufferings (such as numerous difficult labours and lots of screaming children). For enduring all this trouble with serenity, there would be an ample reward, post-mortem. The value of human life was no longer considered dependent on an earthly entity, such as the State, or an organized religion that actually served as an instrument of the State or ruling elite. Rather, it was measured against a supernatural entity, in the name of which the State could be challenged. In Western Europe, particularly, the Church was able to dictate its will to the representatives of temporal power, and made killing in the name of the State, ideology, personal honour, or other mundane matters, somehow unacceptable. (This does not mean that such killing was not practised, especially if one could somehow present it as being sanctioned by God.)

Under these circumstances, there developed a perception of human life as an absolute imperative and, as a consequence, a moral revulsion against infanticide and abortion. Much later, in more secularized centuries, these consequences were still evident (and probably still are, today). Victorian ladies, for example—to whom children were just as much a nuisance as to their forerunners in ancient Rome—felt compelled to get rid of the little beggars in a highly impractical and expensive way: that is, handing them to nannies first, and then to boarding school later.

(Of course, if we had a more accurate picture of what was happening in those times around the backstreets of Islington, our conception of the frequency of abortion in the Victorian period might change entirely.)

Contemporary Attitudes

Abortion Is Still Birth Control

In a society like ours, where affluence is within the masses' reach, picturing a nanny in every house becomes slightly unrealistic (particularly as immigration laws tend to get tougher). Boarding school is an option for parents who value not only money, but also education, but it might well seem a waste of resources for the plumber's wife, who may not care much for a liberal education, but nevertheless values money. Again, birth control becomes a desirable alternative, especially so in view of the newly invented technique, the oral contraceptive, which solves the problem before it even occurs.

With this panacea in the field of family planning, people have quickly become accustomed to the notion that there really is no problem at all. The fact that sexual intercourse leads to pregnancy—simply because, from a physiological standpoint, that is the purpose of such activity—is somehow being erased from the public consciousness. Open statements emphasizing the connection between sex and reproduction are somehow unpopular these days, unless one restricts one's audience to Catholic prelates. No wonder that, after the "Pill" was discovered to cause certain undesirable side effects, people have been scarcely delighted in having to face, once more, the unpleasant reality.

Traditional means of birth control have been rather unreliable, and sterilization is, for most people, a far too drastic an alternative. Abortion, therefore, again becomes a necessary, and widely popular, option.

Furthermore, abortion is being used to free parents and society from the burden of handicapped and unfit offspring. As a result of recent advances in prenatal diagnosis that permit the identification of fetuses at risk, abortion has become a substitute for the more traditional (and currently out-of-fashion) practice of infanticide.

A Contingent Factor

The historical highlights illustrated so far emphasize only those objective factors common to all historical periods, including our own. This provides the reader with a general framework, in the context of which, he should consider the issue at hand. Ignoring those factors that are peculiar to each particular historical situation simplifies the picture considerably. On the other hand, it leads one to disregard the fact that history is made by individuals—people who shape their time according to their passions, ideals, and prejudices, without realizing how much these are, in turn, the result of pre-existing economic and social conditions.

For example, one contingent factor related to abortion, in our times, has been the birth, growth, and foreseeable triumph of the women's liberation movement. No doubt, a great deal of idealism and concern for fellow human beings, as well as the work of dedicated individuals, were essential for the furthering of the feminist cause. However, if we consider that, throughout history, women became more emancipated

as the social class to which they belonged increased its affluence, it seems likely that, in an age where material improvements have crossed class boundaries, emancipation is within (or close to) the reach of women at all levels of society.

In our age, all political and social developments tend to be sanctioned by an ideology, just as, in the past, they used to be presented as the will of God (or the gods). Emancipation of women in the twentieth century has been organized under the banner of its own ideology—that is, feminism.

In the light of a more comprehensive historical frame, the practice of abortion as a measure of birth control is still as function of economic betterment which, in turn, leads to women's emancipation. If we keep considering the issue in this frame, we can easily see the following points.

As I have noted, the elimination of humans in the early stages of development (through either abortion or infanticide) has been practised throughout history for two purposes: birth control, and the riddance of individuals burdensome to society.

Secondly, we no longer need to emphasize, in a moralistic key, the relationship between abortion and women's liberation. Rather, the acceptance of abortion as birth control is a sign—not a cause—of the emancipation of all of society from what we can call "duty and responsibility", as a result of favourable economic conditions. This development allows for a more unfettered enjoyment of life, and thus, the enhancement of a "self-centered" concept of freedom.

Thirdly, the attempt by anti-abortion groups to abrogate present laws legalizing the practice is obviously irrelevant. Abortion has become a social necessity that legislation cannot supress. In fact, restorations of any kind have always been, historically, a failure, being able to delay, but not avert, historical developments. Irregardless of whether it is "right" or "wrong", the practice of abortion is here to stay—at least, until an energy crisis plunges the West into sufficient misery to make children more desirable.

Anti-abortion (a.k.a. "pro-life" or "right-to-life") groups, nevertheless, are part of a phenomenon of larger proportions in our society, with farther-reaching consequences that might be worth examining.

A Political Perspective

In the past decade, we have witnessed a rather dramatic trend in the North American political scene. On the one hand, there has been a blurring ideological distinction between the major political parties, with a concomitant decline in the active involvement of the electorate in party politics. On the other hand, there has emerged the highly-motivated, well-organized, and vocal grass-roots movements—often referred to as "single-issue" groups— which are able to exert considerable pressure on party politicians, by offering, or threatening to withdraw, their support.

In one sense, this development is refreshing, since it instills new vigour into participative democracy, and jars the political class from its complacency in dealing with the electorate. However, single-issue groups have fragmented the political process (for example, in the U.S.), to the point of impeding the implementation of coherent, long-term programs vital to the national interest. In the U.S., these new centres of power have compelled authorities, at local and national levels, to take actions sometimes irrelevant, or even dangerous, to the present political, economic or social situation.

Although often viewed with a jaundiced eye (and criticized with justification), professional politicians do have the mandate to express the will of the electorate in a rational manner, and to shape individual policies, with a view to long-term goals and a wider perspective. Such a service is beyond the capability of the single-issue groups. For the fervent activists—who crusade for or against abortion, seal hunting, Concorde flights, nuclear energy, and so on—limited issues become absolute imperatives, overriding all other social or economic problems The exposure of a largely uninformed public to such an emotional perception of issues produces two deleterious effects: prejudice, and the promotion of that general lack of direction which, in the past decade, has come to characterize Western civilization.

Ethical Guidelines

The Physician's Role

Now that the issue of abortion has been discussed from a historical and political angle, we can lay out some guidelines which may help the physician, both in his practice of medicine and in his dealings with problems of a social nature. Now, granted that abortion is a necessity in our society, and therefore, will be practised, regardless of whether any individual, or even the State, agrees with it, why not be "pragmatic", and just carry out whatever wishes the patient deems to her advantage? Let our own prejudices and religious feelings (or lack of them) dictate our way of life, and no-one else's.

There is, however, one major objection to such an attitude: more than two thousand years ago, Hippocrates, in his famous oath, outlined some principles that still influence the medical profession today. The pious document contained as follows:

> I shall not give a woman a pessary to perform an abortion, but will maintain, holy and pure, both my life and my art.

The significance of this sentence does not lie in the fact that it prohibits abortions 2000 years before the Pope declared them unacceptable. This prohibition, along with Hippocrates' other principles, must be considered in the context of its time. What it does illustrate, however, is that physicians, throughout history, have been able to maintain a detached and independent moral stance about issues—as exemplified by the condemnation of abortion in a society where infanticide was widely practised. This set the precedent for physicians traditionally helping injured soldiers (whether friend or foe) in war, tending to sick people regardless of their religious or political affiliations, and opposing any political power that tried to interfere with the physician's right and duty to follow his own clinical judgement.

In other words, physicians have traditionally been somewhat "above history", acting ethically and

rationally, even in times of general madness, such as wars and dictatorships. Since this position is to society's, and the individual patient's, advantage, it is certainly well worth preserving. We therefore ought to abandon the notion that physicians should merely follow societal trends; on the contrary, their role involves the exercise of leadership, through actions based on independent judgement.

The Fundamental Right

Let us, therefore, make such a judgement concerning the practice of abortion, in terms relevant to our times. In our society, the majority accept that the freedom of each individual to choose his own experiences, lifestyle and beliefs—and to express them without interference—is the most valued of rights. Murder is, therefore, particularly abhorred, because it means the termination of this freedom. If abortion is indeed murder, then it is in contradiction with that fundamental right which most people including myself, claim to value. Abortion **is** murder, if the fetus can be considered a human being, with its own rights, and its own potential to develop its goals and ideals.

How can we define what a human being is? I can think of only two criteria which are not arbitrary. The first defines as a human being that individual who can relate with his environment on a cognitive level. In that case, a fetus would not qualify—nor would newborn babies, severely demented old people, some mental retardates, and comatose patients. If, instead, we are contented to classify as a human, anyone who belongs to the species *Homo sapiens*, regardless of the stage of development it has reached, then we wold have to consider a zygote (representing *Homo sapiens* in its earliest stage of development) as definitely human.

But, because development is a continuous process inside and outside the womb, any attempt to define the "humanity" of the fetus according to gestational age is hopelessly arbitrary. Arbitrariness implies abdicating the use of reason, which is, in my view, unacceptable. Let us, then, look at the likely consequences of adopting either of these two definitions.

The first definition would make abortion acceptable, and would furthermore, sanction infanticide. I would regard this point of view as consistent, courageous, and quite legitimate. Taken to its extreme, however, it inspires visions of carnage: the extermination of the populations of nursing homes, chronic hospital wards, and homes for the severely retarded. I do not think that our society is prepared to accept this as yet. Certainly I am not.

It is more realistic to adhere to the second definition which, in keeping with the premise of freedom as the most fundamental of rights, renders the practice of abortion definitely unacceptable. Clearly, if we conceive of the fetus as an individual having the potential to experience life, and to develop its own goals and ideals, we cannot morally justify its elimination on any grounds. We have to join Hippocrates in the nonconformist stand he uncompromisingly took, 2,500 years ago. □

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Canadian Cancer Society

CAN CANCER BE BEATEN?
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Osteoporosis Update: A Symposium

Defined as a pathologic reduction in the body's bone mass, osteoporosis can manifest in a variety of clinical settings. Endocrine disorders, nutritional deficiencies, congenital syndromes, auto-immune and idiopathic conditions, drug-related abnormalities—there are, indeed, enough "differentials" to challenge even the well-honed, systematized mind of a house officer.

Of more significance to physicians and the public, however, is the progressive bone loss, known as "senile" osteoporosis, that commonly afflicts older people. Postmenopausal women, in particular, are susceptible: an estimated one-quarter of all white women over 60, for example, have vertebral compression fractures due to osteoporosis. A fall, or even a seemingly innocuous misstep, can fracture the weakened neck of the femur, resulting in an elderly person's (sometimes terminal) confinement to bed. And, although there is no dearth of theories as to its etiology (e.g., diminished blood estrogen levels), the precise causes of osteoporosis as yet remain a mystery.

On September 25, 1980, a symposium entitled Osteoporosis Update was held at Women's College Hospital in Toronto, under the auspices of the Program in Human Nutrition and the Bone and Mineral Metabolism Unit of the University of Toronto's Faculty of Medicine. Divided into segments covering an overview of the disease, new investigative methods, research developments, and approaches to management, the symposium was alternately chaired by Drs. A. Rapoport (Professor of Medicine, UofT, and Physician-in-Chief, Toronto Western Hospital), T.A. Bayley, T.N. Murray (both Department of Medicine, UofT), and J.E. Harrison (Chairman, Bone and Mineral Metabolism Unit).

Guest speaker Robert Heaney, M.D., of the Creighton University School of Medicine (Omaha, Nebraska), described the influence of estrogen and dietary factors on age-related bone loss. Postmenopausal estrogen administration results in a less negative calcium balance, and hence, mediates a protective effect. High dietary intake of protein, on the other hand, induces a more negative calcium balance, causing an increased rate of bone loss. Similarly, a high intake of caffeine also increases the risk of developing osteoporosis.

Both invasive and non-invasive methods of measuring bone loss are now in use. Since osteoporosis is a common disorder, relatively simple and inexpensive non-invasive procedures are desirable for screening purposes. Dr. Eric Meema, Professor of Radiology at the University of Toronto, outlined the recently-developed technique of magnification radiogrammetry. Fine-detail radiography of the hands allows one to determine whether intracortical porosity or resorption (endosteal or periosteal) is responsible for the osteoporosis.

Estimation of the total bone mineral in central skeletal regions (e.g., trunk or thighs) can be gained by the analysis of neutron activation of calcium. Results of this non-invasive procedure—as described by Dr. J.E. Harrison—indicate that men over age 50 suffer a reduction in central skeletal mass of 3% per decade, while postmenopausal women undergo a loss of 8% per decade. Osteoporotic fractures are associated with a 30% loss of bone mass.

Dr. A.M. Parfitt, Director of the Henry Ford Hospital's Bone and Mineral Research Laboratory in Detroit, explained the contribution of bone biopsy (an invasive technique) toward understanding the pathogenesis of osteoporosis. Defective osteoblastic function, for example, appears more important in this disorder than increased osteoclastic resorption.

Finally, a discussion was convened on current approaches to management. According to Dr. Parfitt, correcting estrogen deficiency may help prevent development of the disease. Established osteoporosis can be corrected by two methods. Low-dose administration of parathyroid hormone probably acts by depressing osteoclastic activity and enhancing the recruitment of new osteoblasts. This effects "sequential manipulation" of the bone-remodeling system. Sodium fluoride, on the other hand, "bypasses" the remodeling system by recruiting new osteoblasts on previously quiescent bone surfaces.

Despite its well-known serious effect on the health of the elderly population, osteoporosis is a disease whose cause(s) and satisfactory management remain elusive. Recent advances in research, such as those disclosed at the Osteoporosis Update symposium, should speed the development of a wholly effective treatment for this disorder. □

R. Jin 8T2

The Journal would like to thank Mr. Barry Ashpole (Media Relations, Osteoporosis Update) for sending information and photographs on this symposium.

The Mentally Handicapped and the Institution

Policies in chronic care facilities for the mentally retarded have undergone significant changes in the past two decades. The philosophy in the past was to institutionalize the retarded, isolating them from the rest of the community. Thus society could turn their backs on those not able to perform up to their standards and in turn deprive them of many of their rights and needs. Facilities were overcrowded and understaffed allowing a mosaic of people with varying handicaps and weaknesses to deteriorate. Health care was ignored as nursing and medical teams were overworked and understaffed. Nutrition and hygiene were also important areas in need of improvement.

The growing public acceptance of the retarded and the realization of their potential began in the 1960's and 70's. Provincially run institutions were pressured into improving the conditions at their facilities. At the Huronia Regional Centre (formerly the Ontario Hospital School), located on the outskirts of Orillia, Ontario, the unofficial population of 2600 was reduced by almost two thirds in this 20-year period. Many of the higher functioning 'residents' were integrated into community living projects while others were intransferred to more appropriate facilities. The focus then for the retarded has become community living and as such, admittance to HRC has now dropped considerably.

Those who remain at this large facility overlooking Lake Simcoe have specific needs, handicaps or illnesses which make them most suitably placed at HRC. The geriatric population is slowly declining and includes many who have lived at HRC since their childhood. Presently, the majority of residents are moderately or severely retarded with males outnumbering females. Still, a growing number of mildly retarded, who are unable to function in the community due to various personality and psychiatric difficulties, reside at HRC. The 202 bed infirmary cares for the acutely ill and the physically handicapped, providing medical services to both residents and staff.

The needs of the retarded today at HRC are distinctly different from the group that lived here 20 years ago. Today, realization that the quality of life can be improved for the retarded has resulted in the development of new programs. Speech & audiology, optometry, physiotherapy, occupational therapy, dentistry, EEG, kinesiology and psychology departments have set up programs, attempting to meet the needs of the population as a whole as well as of specific groups such as the deaf and blind. It must be appreciated that these programs may not improve or correct these people's handicaps, they may however postpone or prevent further deterioration.

Medical care at HRC has improved considerably over the past 2 decades. The 9 physicians and 12 public health nurses provide the primary care to the residents, while clinics in cardiology, orthopedics and neurology are held regularly. Psychiatric services are also being organized at this time. The emergency clinic and the X-Ray department can handle most of the emergencies that occur, and further medical and surgical care is available in Orillia, Barrie and Toronto.

The specific health care needs of the mentally retarded can be quite unique. Considering the barrier in history taking and compliance in examination, the medical staff are often extremely disadvantaged in patient management. Thus, providing medical care is both a challenge and a frustration. Diseases such as hepatitis which are common to the institution, as well as those which are common amongst the retarded in general, e.g. epilepsy and congenital heart disease, must be dealt with.

The institution for the retarded no longer exists in its past form. Today, in the midst of a reconstruction of attitudes and services, we see a new approach to retardation. It will take time to show the effects as a new 'generation' of retarded grow up, but eventually, most of the retarded will be community raised having many of their health care needs met by community services. Still, the severely handicapped will remain institutionalized.

The medical profession must prepare to meet the needs of the retarded. The individual physician must learn to develop both the trust of the patient as well as an understanding of the disease processes and the difficulties that the retarded face. With increased education of all health professionals with respect to the care and treatment of the mentally handicapped, we can be assured that the future for the retarded will be a healthy one. □

Elliot Weiss 8T2

Normality In Perspective

Robert Hegele 8T1

The following is an excerpt from a chapter of *The University of Toronto Method of Psychiatry*. This critical chapter was unfortunately omitted from the current edition after the final proof found its way into an editor's dog's gastrointestinal tract. We print it here as a public service and encourage all owners of the book to paste it onto the back cover for easy reference.

Chapter 32A: Normality

by Dr. F. Cedric Woly

Normality is a clinical syndrome which occurs with surprising frequency in both general and psychiatric practice. One study claims that up to 998 out of 1000 members of the general population can be considered "normal" by any criteria and that as many as 90% of patients coming into a general practitioner's office have no psychiatric problems. So, whether we like it or not, it is necessary for psychiatrists and students of psychiatry to learn a little about this pervasive condition since they will no doubt encounter it at some time in their practice.

The Pathology of Normality

Although much study has been done into the nature of normality, researchers still know very little about "what makes someone normal". A group in Denver has demonstrated a high concordance among normal monozygotic twins. Family studies show that normal infants who are adopted by schizophrenic parents have a higher risk of becoming normal adults than do schizophrenic infants who are adopted by such families. Biochemical research shows that normal people have a characteristic normal pattern of neurotransmitters on quantitative immunoelectrophoresis. Much research remains to be done, however.

Psychological Theories

The psychoanalytic school believes that normality is a product of the normal development which a normal person normally undergoes, and so the nature of his normality can be traced back to normal childhood feelings and experiences. Treatment of normality by psychoanalysis is geared towards uncovering events in the person's childhood which may be considered normal, and then bringing these normal events out of the subconscious, giving the patient insight into his own normality. This is, according to Freud, the first step toward constructive change; for example, a neurosis.

Learning theorists, on the other hand, believe that a person's normality is a pattern of behaviour which arises through constant reinforcement, i.e. normal people are "conditioned" to be normal. These patients may thus be treated by systematically "unlearning" the normal behavior through negative reinforcement while simultaneously stressing the desired aberrant behaviour. The results with this method have been quite promising, although the ultimate outcome, whether converting a normal patient into a psychotic or merely a pleasantly neurotic one, is still unpredictable.

Clinical Features

For the novice, a normal person may be difficult to distinguish from one with psychiatric pathology. However, with some practice and keen insight, the psychiatrist can usually develop the ability to confidently identify the normal or potentially normal patient after only several interviews. The normal person appears normal. His/her behaviour and attitude are normal. He/she will have no complaints and when asked if this is normal for him/her, he/she replies "Yes" (normally). The normal patient appears normally oriented. His/her mood is normal. The characteristics of his/her speech are entirely normal. Normally, delusions, illusions, hallucinations (visual, auditory, tactile, olfactory) are absent. There are normally no phobias, obsessions, compulsions, ritualized behaviours or other abnormal demeanour. When asked if he/she hears voices or thinks people on T.V. are talking directly to him/her, the normal person will

normally look at the clinician and say, "What do you think I am? Crazy?". The clinician would do well to humour the normal person in such a situation. The memory and general intellectual functioning of a normal person are, normally, within normal limits. The normal person has normal insight and his thoughts are free from abnormal abnormalities.

All in all, the normal person is normal: that is to say, he demonstrates no abnormality in any aspect of psychological functioning or behaviour. While most people present with the full-blown "normal picture", some are normal except in one or two areas. For example, G. K., a 37 year old accountant, was judged to be completely normal until an astute psychiatrist noticed that she always wore sour cream in her hair and would crawl around on all fours, biting peoples' ankles and then screaming the word "Faggot" at the top of her lungs. Anyone but a well-trained psychiatrist would have missed the subleties of this behaviour and passed her off as being normal.

Conclusion

As should be obvious by now, normality is a clinically important psychiatric syndrome which, although it is perhaps underdiagnosed, is nevertheless important for students of the art to understand. While much is still unknown about normality, it is only a matter of time before psychiatric research technology discovers the true nature of the condition, and subsequently how to eradicate it before it puts all psychiatrists out of business. □

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red and blue lights
catatonically swaying
as unalive as the glimmer
off the smudged surfaces
of the brass rails
faces
all colours
pock-marked with somewherelse
so unboundedly happy
in this the saddest place
i know

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boy loses girl
life is unkind

cinema 2:

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because he never meets her
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cinema 3:

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